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AN EXPERIMENTAL STUDY OF PATTERNS FOR IMPROVING THE PREPARATION OF PRE-SERVICE TEACHERS IN THE USE OF AUDIOVISUAL MATERIALS AND OF EFFECTS ON PUPILS.
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A TWO-PHASE STUDY WAS REPORTED ON THE IMPROVEMENT OF TEACHER PREPARATION BY USE OF INSTRUCTIONAL MATERIALS. THE FIRST PHASE INVOLVED FOUR PATTERNS OF INSTRUCTION--A SEPARATE COURSE, INTEGRATED COURSES, SELF STUDY, AND STUDENT TEACHING. PHASE TWO INCLUDED FOLLOWUP ACTIVITIES TO DETERMINE THE EFFECTIVENESS OF THE TEACHER PREPARATION PROGRAM. A TOTAL OF 896 STUDENTS WERE INVOLVED IN THE EXPERIMENT. PHASE ONE DESIGN CALLED FOR RANDOM DISTRIBUTION OF STUDENTS AMONG THE FOUR PATTERNS OF INSTRUCTION. A NUMBER OF EQUATING AND EVALUATION INSTRUMENTS WERE ADMINISTERED. THE STATISTICAL ANALYSIS IN THIS PHASE CONSISTED OF THE COMPARISON OF THE VARIOUS GROUPS AND SUBGROUPS ON MEAN PERFORMANCES. THERE WERE NO SIGNIFICANT DIFFERENCES AMONG THE PATTERNS IN TERMS OF A GROSS COMPARISON ON ALL MEASURES. PHASE TWO RECORDED AND OBSERVED THE EFFECTS OF THE VARIOUS PATTERNS OF INSTRUCTION UPON THE PERFORMANCE OF THE PARTICIPANTS IN THE EXPERIMENT UPON BECOMING INSERVICE TEACHERS. THE PHASE II ACTIVITIES REPORTED INCLUDE A PROCEDURE FOR LOCATING STUDENTS AND ARRANGING INTERVIEWS, AND A DESCRIPTION OF INTERVIEW SCHEDULES AND ANALYSIS TECHNIQUES. THE RESULTS INDICATED THAT THE SELF-STUDY PATTERN PRODUCED THE MOST POSITIVE OPINION TOWARD THE AUDIOVISUAL COURSE. THE GENERAL CONCLUSIONS DRAWN FROM THE RESULTS OF THE TOTAL 4-YEAR EFFORT WERE THAT, IN ACQUIRING THE INFORMATION AND SKILLS ASSOCIATED WITH A BASIC AUDIOVISUAL COURSE, NO ONE PATTERN OF INSTRUCTION WAS BETTER THAN ANOTHER, AND THAT THE TEACHERS DID NOT TAKE ADVANTAGE OF THE MATERIALS AND EQUIPMENT AVAILABLE IN THE SCHOOLS. (RS)

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AN EXPERIMENTAL STUDY OF PATTERNS FOR IMPROVING THE PREPARATION OF PRE-SERVICE TEACHERS IN THE USE OF AUDIOVISUAL MATERIALS AND OF EFFECTS ON PUPILS

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AN EXPERIMENTAL STUDY OF PATTERNS FOR IMPROVING THE PREPARATION OF PRE-SERVICE TEACHERS IN THE USE OF AUDIO VISUAL MATERIALS AND OF THE EFFECTS OF OPTIMAL USE OF AUDIO VISUAL MATERIALS UPON PUPIL LEARNING AND TEACHER USE

INTRODUCTION

This study, sponsored under Part A, Title VII, NDEA, was conducted between July 6, 1959, and June 30, 1963. In general terms it was divided into two major phases. One involved four patterns of instruction for preparing pre-service teachers at The Pennsylvania State University to use audio visual materials and equipment in their subsequent teaching positions. The other phase concerned follow-up activities in which graduates from the experiment were visited at their respective teaching locations in Pennsylvania to determine the effects of the preparation they had had as undergraduates.

In the original design of the study, three questions were posed:

1. What is/are the best pattern/s for insuring pre-service teacher competencies in the optimal use of audiovisual materials that will carry over into teaching positions?

2. What are the effects of saturating elementary and secondary school classes with optimum varieties and quantities of audiovisual materials?

3. What will be the effects of "saturation" upon the in-service teachers' use of audiovisual materials once the stimuli of experimental conditions are removed?

Phase One of the study investigated the comparative effects of four patterns for preparing pre-service teachers to use audiovisual materials and equipment over the course of four successive semesters. The four patterns--described in detail later--were: (1) a Separate Course, (2) a pattern in which the content of the traditional audiovisual course was integrated with methods courses--hereafter called Integration Secondary or Integration Elementary, (3) a Self-instruction pattern--hereafter called Self Study, and (4) a pattern in which the audiovisual content was taught in conjunction with student teaching. This pattern, hereafter called Student Teaching, was subdivided into two treatments for each of the Elementary and Secondary student teaching groups, one called Saturated and the other Non-Saturated. The term Saturated designates the addition of audiovisual equipment to the sources of the schools in which the student teaching occurred. Non-Saturated designates the sole dependence upon the audiovisual equipment in the schools, with no additions from The Pennsylvania State University sources.

Phase Two of the study involved visits to graduates from the experiment at their teaching locations in Pennsylvania for purposes of obtaining: (1) judgments of classroom performance of the teacher in the use of audiovisual materials and equipment, (2) a record of the availability of audiovisual materials, equipment and facilities in the classroom and the school generally, and (3) the evaluation by each new teacher visited of the pattern by which that teacher was prepared to use audiovisual materials and equipment.

I. PHASE ONE - FOUR PATTERNS OF PRE-SERVICE TEACHER PREPARATION

1. PRELIMINARY CONSIDERATIONS:

1.1 Course Content

A primary consideration in establishing the experimental patterns was a need for standardization of content and procedures wherever possible.

For standardization of content, the outline for the Separate Course was used. This outline was the product of long experience at The Pennsylvania State University and had been developed to meet the basic audiovisual course requirement for all teachers prescribed by the State of Pennsylvania since 1935. (see Appendix for outline)

Proceeding from this outline, each instructor taught the pattern to which he was assigned, making certain that the basic content was included. On some occasions a given sequence for presentation of the topics suggested by the outline could not be followed. This was true in the pattern which integrated the audiovisual content with the methods courses in the elementary and secondary teacher preparation curriculums. In these cases, the sequence for dealing with the audiovisual content was adjusted to the requirements of the elementary and secondary courses.

In the Self Study pattern, the demands in constructing and dismantling the self-instructional sequences, the absence of an instructor for providing traditional continuity, the needs for complete self-containment of content, all prevented adherence to the sequence suggested in the basic outline. Efforts were made, however, to include the content of the outline within the scope of the self-instructional treatment.

In the Student Teaching pattern, it was necessary to adjust the outline sequence to the requirements of student teaching. The Student Teaching variable was conducted in public school systems in various parts of Pennsylvania. As a result of the circumstances at each location, the content was presented several ways by the instructor; partially in a formal setting with the student teachers meeting during or after school hours--or in the evening; and partly on an individual basis, as the instructor observed and worked with the student teacher in the classroom during the day.

In actual practice, the only pattern in which the outline was followed sequentially was the Separate Course. As a check on the uniformity of content among the patterns, periodic staff meetings were held for purposes of discussing progress and for meeting problems which may have arisen. It is the judgment of the author, who was director of the project, that agreement was reached on common procedures and that the instructors exercised precautions to maintain content control.

1.2 Instructors

Any study of the size and complexity reported here is subject to many variables, some of which made rigid control difficult or practically impossible. Among these were the needs in the experiment for nine different instructors, each having a greater or lesser responsibility for course instruction. Each instructor, however, had had specific graduate preparation in audiovisual instruction and was thoroughly familiar with the content to be taught. All had had previous public school teaching experience and/or college experience in teaching audiovisual courses.

In assigning instructors to patterns, those with the greater experience in the content of the experiment were assigned to patterns where readjustments in the course sequence may have been required by the nature of the pattern. For example, one instructor with previous teaching experience in audiovisual education was assigned the responsibility for managing the Self Study pattern throughout the study. With the exception of the first of the four-semesters involved, the director of the project assumed the sole responsibility for the Integration Secondary pattern. By and large, the members of the staff with considerable previous experience were assigned to the Integration Elementary pattern and to Student Teaching. Where an instructor had less experience, he was assigned to a Separate Course section, since the course sequence was well defined and the pattern, by nature, could be instructor-directed.

As teaching experience in the experiment increased, these instructors also taught in other patterns. Among the eight instructors who taught in three patterns of the project, five instructors taught at one time or another in each of three patterns, the Separate Course, Integration, and Student Teaching; one instructor taught in the Separate Course and Student Teaching; one in Student Teaching; and one in Separate Course. One of the eight instructors became involved in Self Study only on an advisory basis since this pattern precluded the presence of an instructor, and had been assigned to a ninth instructor who assumed responsibility for its direction.

The instructor for the Self Study pattern developed the instructional tasks--with the advice and assistance of the general staff. This instructor did not teach in any of the other patterns.

In terms of instructor characteristics biasing any one pattern, it is the judgment of the project director that the varying experience of the instructors among the three patterns tended to diminish bias, although it was not possible to rigidly control the instructor factor.

Four out of the nine instructors also participated in teaching some of the on-campus laboratory sessions which were organized for instruction in equipment operation. The remaining instructors for the laboratories were drawn from the graduate student ranks, but were men with previous experience and knowledge of audiovisual equipment operation and with previous public school teaching experience.

1.3 Equalization of Time

Another factor which was controlled as far as possible was the equivalence of time spent by students in the various patterns.

The standard used for equalizing patterns was the hours-per-week allotted to the Separate Course. This traditionally was a two-credit course, providing 100 minutes (2 periods) for lecture-discussion-demonstration and 50 minutes (one period) for laboratory activities over the course of a semester. One hundred and fifty minutes a week was thus considered as the base-time available. In actual practice, it became necessary to calculate in terms of time-equivalence since all patterns did not lend themselves easily to rigid controls possible in the Separate Course, where the time spent was determined by the passage of 50 minute segments, spent in pre-scheduled class periods.

In the Integration Elementary pattern, for example, the time factor was influenced by an eight-weeks sequence and by the necessity to incorporate the audiovisual content into approximately nine credit hours of classes in the teaching of the social studies, mathematics, science and reading.

In the Integration Secondary pattern, the course was in session for the full semester and the audiovisual content was incorporated into the seven hours of class-sessions each week scheduled for the general methods course.

In the Self Study pattern, conducted over the course of the semester, three 50 minute periods per week were made available for presenting course content and instruction in equipment operation. Actual records of student attendance for the Fall Semester, 1960, indicated a range of time spent per session of 15 to 135 minutes. The average time spent by all students was 38 minutes, or 76% of the time allotted per session. It was the judgment of the supervisor of the Self Study pattern that the attendance over the course of three semesters did not vary significantly from the Fall 1960 analysis.

The Student Teaching pattern--in both the Elementary and Secondary Education Departments--was taught in the context of an eight-week block of time. Time-equivalence, therefore, was a matter of totalling the time spent in formal class presentations at the student teaching locations and the time spent by the instructor in working individually and collectively with the student teachers in their respective classrooms during the weekly two-day visit. In every instance of student teaching, effort was made to conduct the equivalence of a 120 minute discussion-lecture session each week at the student teaching location. Circumstances at some student-teaching locations required two sessions a week at the beginning of the course, then finishing the course with single sessions--or to total the equivalence mentioned above.

It appears, therefore, that equivalence must be considered from two aspects; one, the actual time-equivalence possible in a given pattern, and two, the opportunities for content-equivalence.

Time-equivalence, as one might measure by a stop-watch, was not met exactly in all of the patterns, using the arbitrary standard of the time spent in the Separate Course pattern. In fact, time-equivalence was only possible by making adjustments to the idiosyncracies inherent in the four different patterns. Thus, attainment of an arbitrary time-equivalence would seem to be an artificial measure, since the basic task was to teach content-equivalence within the context of each pattern.

One might argue, therefore, that insistence upon exact time-equivalence would have prejudiced the experiment in such a way that the incorporation of the audiovisual content into the existing framework of other University courses would not have been a fair test. Where time-equivalence was possible within a given context, time-equivalence was stressed. In all cases, every effort was made to provide for audiovisual content-equivalence.

1.4 Materials for Instruction

To prevent the interruptions and scheduling difficulties inherent in renting films, filmstrips and the like, materials were purchased for the project and placed in a common repository for the instructors. (see Appendix) In addition to commercially obtainable films, filmstrips, slides and other pertinent materials, a number of teaching kits were prepared to provide illustrations needed by the instructors in teaching the content of given units of the course. These kits were prepared in sufficient quantities so that all instructors had access to materials as needs arose. These materials were used in all of the patterns except Self Study. The latter arrangement required particular adaptation of materials to the self-instruction requirements and precluded instructor-supported materials. Substituting for the instructor in the Self Study pattern were magnetic-taped and disc recordings, printed materials, photographic materials, charts, graphs, posters, 16mm motion pictures, and kinéscopes. The five kinéscopes produced for use in the Self Study pattern dealt with the subjects of communication theory, the classification of media, role-playing, still pictures, and the demonstration technique.

In addition to the materials provided for instructors, certain reading materials were made available to all students, regardless of pattern. The basic "text" was an unpublished multilith work of Dr. A. W. Vander Meer, the content of which included chapters on: Teaching, Learning and Communication; Types of Teaching and Learning Materials; Audio Visual Materials and Individual Differences Among Learners; Instructional Materials and Types of Learning; Methods of Using Instructional Materials; Mechanical Aspects of Using Audio Visual Materials; The Teacher, Instructional Materials and the Administrator. On the RESERVE shelves in the University Library were placed sufficient copies of three basic texts for use as collateral reading.

Dale, E. Audio-Visual Methods in Teaching, Revised Edition, Dryden Press. 1958

Kinder, J. Audio Visual Materials and Techniques, Revised Edition, American Book Company. 1959.

Brown, J. W., Lewis, R. B., Harcleroad, F. F. A-V Instruction, McGraw-Hill. 1959.

These books were also made available to the students in the Student Teaching pattern by placing a number of copies of each book at each teaching location.

Standardization in the use of materials was obtained further by specifying films and filmstrips to be used with given units of the course. In the Self Study section these same films and filmstrips were provided for individual viewing.

2. PATTERN DESCRIPTIONS:

2.1 Separate Course

The format for the Separate Course consisted of a double period (100 minutes) of lecture-discussion-demonstration involving both the instructor and students in the class activities. In addition, each student met once a week for a separate laboratory session (50 minutes) with students from other Separate Course and Integration sections.

For purposes of arriving at final grades, each instructor gave short tests during the semester at intervals agreed upon by the staff. The particular form of the testing was at the discretion of the instructor, except that the content covered was mutually agreed upon. The result of these examinations were used only by each instructor for final grading. For experimental purposes, all students were given the same pre-course and post-course examinations.

For purposes of convenience and to expedite uniform use of teaching materials and equipment, all Separate Course sections met in the same room equipped with darkening shades and with shelves for the storing of common materials and equipment.

2.2 Integration

Integration in the context of this study meant initially the incorporation of the audiovisual content (exclusive of equipment operation) into the existing structure of subject methods classes in the elementary curriculum and in the general methods course in the secondary curriculum. In the early stages of the project, Integration meant adding audiovisual content to the class discussion more as an addendum than as an integral part of the course. Gradually this changed to permit closer liaison between the instructors of the methods courses and the instructors in the project so that there was mutual planning as well as instruction.

In order to understand the context within which integration occurred, it is necessary to describe the different scheduling patterns used by the Elementary and Secondary Education Departments at the University.

2.21 Integration Elementary

In the Department of Elementary Education, the integration of the audiovisual course content was in the context of an eight-weeks period of time during which the students spent this period of time on campus. The other eight-weeks period was scheduled off-campus at a student-teaching location.

Each eight-weeks student teaching period was either preceded or followed immediately by an eight-weeks methods courses in reading techniques, social studies, mathematics and science. Any given group of students assigned to student teaching location became the same group which met together for the methods courses in the eight-weeks preceding or following student teaching. Integration thus occurred with the on-campus group.

Table 1 indicates the eight-weeks period and the groups in the Integration pattern. The names of the groups indicate the locations where the student teaching was to occur or had occurred in the eight-weeks opposite the filled-in space. It should be noted that the names designated on the chart do not suggest that the Integrated audiovisual course was presented at the student teaching locations. These names merely indicate which student teaching group was "Integrated" on-campus.

TABLE 1. Integrated Elementary Groups

	Fall 1959	Spring 1960	Fall 1960	Spring 1961
First 8 wks	*Port Allegheny student teaching	Smethport student teaching		York student teaching
Second 8 wks			Hempfield student teaching	

* Names indicate location in Pennsylvania for student teaching assignment. These groups, however, met on-campus during the time slot indicated for the Integrated pattern.

The general arrangements required by the curriculum in the Elementary Education Department meant that the instructor assigned to teach the audiovisual content had to visit a number of different classes and to provide that content by participating with the methods professor in conducting the class sessions. In the Spring Semester, 1960, for example, the instructor for the Integration Elementary patterns divided his time among methods classes in arithmetic, science, reading and social studies. Because of the concentrated program necessitated by the eight-weeks time limit, the instructor attended these classes approximately nine hours a week. As a general procedure, the instructor provided instruction and comment on the audiovisual content for variable lengths of time and at different points in the methods sessions. At given times the students were taught principally by the professor of audiovisual education. At other times, this professor merely made a few appropriate comments or did not contribute at all during the session, particularly if the nature of the discussion and presentation did not relate to the content and purposes of the audiovisual course.

In the Fall Semester, 1960, the audiovisual instructor assigned to Integration Elementary found it much more convenient and efficient to work most closely with the mathematics professor. In every case, however, it was the responsibility of the professors assigned to the Integrated patterns to make a conscientious effort to include the basic content of the audiovisual course. As one might expect, there were varying opportunities for the audiovisual content to be incorporated into the methods courses. One reason for this was the limitation inherent in the course structure and the nature of some of the course which precluded discussions relevant to the audiovisual content to be "integrated." Another was the decision at the outset of the experiment that the audiovisual content would be incorporated into the framework of existing courses only where most applicable, and that this incorporation would not place undue demands on the subject methods courses themselves. Integration had not been general practice prior to the experiment. During the experiment, therefore, faculty cooperation was within the framework of existing courses rather than being characterized by a complete revision of the structure and sequence of the methods course to incorporate the audiovisual content. This arrangement was more characteristic of Integration Elementary throughout the experiment than with Integration Secondary. In the latter case, mutual planning by the professors involved became more complete as the semesters passed and definite steps were taken to structure the content of the audiovisual and methods courses as a single, integrated experience.

It was the judgment of the instructors that the Integration Elementary pattern provided at least a minimum of the audiovisual course and that the basic points were covered, either by the instructor himself or by the collaborating faculty member responsible for the subject methods courses.

2.22 Integration Secondary

The pattern of integration in the secondary education curriculum differed from that used in the elementary curriculum, both in the structuring of the integrated course and in the extent of collaboration of the instructors involved. Except for the Fall Semester, 1959, a "dry-run" semester not included in the final calculations of this experiment, the instructor in the integrated sessions in the secondary curriculum was the director of this project. Integration Elementary involved several instructors for the audiovisual portion. Integration Secondary occurred in the context of a general methods course--not subject methods as in the elementary arrangement--and involved sessions for a full semester, rather than sessions for eight weeks.

In the Spring Semester, 1960, the general methods course was taught by an educational psychologist, a professor for methods, plus the author. During the Fall, 1960 and Spring, 1961, the author and a professor in general methods taught the course. This methods professor was not the same one who taught in the Spring, 1960.

During the Spring Semester, 1960, the author attended all but two or three of the sessions of the methods course, contributing where the opportunity permitted. In addition, twenty-seven members of the class (out of 39) attended a separate one-hour session a week devoted exclusively to the audiovisual content. The other twelve members of the class did not attend the additional session since they were not involved in the experiment. Some question may be raised about the possible contaminating influences of the twelve students who were not in the experiment. It is the judgment of the author that there was no evidence of any influence of the twelve students upon the actions or understandings of the members of the class included in the experiment. None of the non-experimental members made any contributions in the class which indicated a particular understanding of the audiovisual content beyond that exhibited by the other members.

In addition to the discussion sessions, members of the Integration Secondary pattern met in a laboratory one period per week for purposes of learning equipment operation. Members from the Separate Course pattern and the Integration patterns were intermixed in the equipment labs. This arrangement was used for all four semesters of Integration.

During the Fall Semester, 1960, and the Spring Semester, 1961, the author worked more closely with the professor in Secondary Education responsible for the general methods course than the arrangement permitted during the Spring, 1960. This collaboration occurred in four areas. The first, in order of occurrence, was planning the course in such a way that it dovetailed the activities and content of the two separate courses into one.

In this arrangement, seven hours a week were spent in class; Monday, Wednesday, and Friday for one hour, and Tuesday and Thursday for a double hour each day. During this time both professors were present in the class, one or the other assuming responsibility for the day, as the schedule dictated. This activity in the classroom became the second area of collaboration.

A third area for the collaboration of the two professors was in designing student activities. Both courses separately had required student term reports, demonstrations, discussions and the like. Where possible these were combined to serve the purposes of both courses. For example, in the Fall Semester, 1960, a mimeographed handout, Unit Assignment Supplement required and stressed the use of media in constructing the Unit. In the Spring Semester, 1961, another type of assignment, Group Presentations (see Appendix), required the inclusion of a variety of teaching media, in fact, "almost to the point of exaggeration," as quoted from the assignment sheet.

In addition to a mutual evaluation of student progress by the professors involved, the fourth area for cooperation involved a number of field trips to schools within a convenient distance from the University. One of the purposes of the general methods course was to provide students with at least a minimal experience in observing and becoming acquainted with the adolescents they might be expected to encounter in their student teaching position. To provide this experience, four field trips were arranged where the students became successively more involved in the affairs of adolescents in the school to which each was assigned. Each student observed classes, followed the activities of one adolescent throughout the school day, interviewed that adolescent, and ultimately--on the fourth return visit--taught a short lesson in his area of competence.

In the field trip, there were opportunities for incorporating several experiences of relevance to the audiovisual course. One was observing how classroom teachers utilized media. This observation provided a basis for discussion of media utilization and selection. A second purpose, that of gaining experience in selecting and using media, was met in a somewhat limited fashion when the student returned to school for his short teaching requirement. At this point, each student was urged and encouraged to incorporate media in his presentation. In fact, students were supplied from the equipment pool of the experiment. In some cases, it was possible for the students to make arrangements for the use of school equipment. All schools, however, were not equally equipped to meet the student demands.

If one were to characterize the Integration Secondary pattern in a few words, especially in the last two semesters of Phase One of the experiment, one could say that it was the "team" approach to integration. As the later analysis of the experiment will show, the "team" approach is judged to have been a positive factor in the ranking of the Integration Secondary pattern as a close second to the Separate Course as the pattern which produced best results on the various measures used in Phase One of the experiment.

2.3 Student Teaching

Student Teaching as a variable in the experiment involved two different curriculums and two treatments. The two curriculums were in Elementary Education and Secondary Education. The two treatments were called Saturated and Non-Saturated.

Table 2 indicates the locations of the Student Teaching patterns, the eight-weeks period of time in each semester, the curriculum involved, and the type of treatment at each location. Circumstances of scheduling did not permit the involvement of the Student Teaching pattern in Secondary Education until the second eight-weeks of the second semester of the experiment. Considering the fact, however, that the data analysis was limited to the last three semesters, the secondary students were involved in this pattern only one less time than the elementary students; Elementary

- 6 times, Secondary - 5 times.

TABLE 2. Location of Student Teaching Patterns
(Towns in Pennsylvania)

	Fall 1959		Spring 1960		Fall 1960		Spring 1961	
	Sat.	Non.Sat.	Sat.	Non.Sat.	Sat.	Non.Sat.	Sat.	Non.Sat.
Elementary								
1st 8	Kane		Bradford N-9		Kane N-22			Bradford N-26
2nd 8		York		Tyrone N-13		Port Allegheny N-16	Tyrone N-24	
Secondary								
1st 8						Doylestown N-10	Del Haas N-21	
2nd 8				Harrisburg N-15	Neshaminy N-12			Harrisburg N-18

2.31 Student Teaching Saturated

One of the original intentions of the experiment was to determine the "effects of saturating elementary and secondary school classes with optimum varieties and quantities of audiovisual materials." The original plan was to add to each teaching situation or classroom during the student teaching experience a variety of materials and equipment which would enhance the presentations of the student teachers and give an opportunity to observe student teacher reactions and those of the pupils and in-service teachers. It soon became apparent, however, that the distribution of the student teachers among many classrooms in many different locations precluded this approach. An additional major deterent was the inability to anticipate the needs of the student teachers enough in advance of teaching to provide the kinds of materials necessary. To record responses of students in many classrooms was determined also to be logistically impossible. The materials used in the experiment, therefore, were filmstrips supplied in limited quantities from the University and from local school supplies, and 16mm motion pictures which the student teachers were permitted to obtain in unlimited quantity from the University film library collection, one of the largest in the East. Pictures, models, bulletin board materials and the like were supplied by the student teachers and the school systems.

Saturation, as a presumed ideal or standard, means complete availability of all types of audiovisual equipment and materials in such quantities that every teacher will have maximum use and availability. Saturation in the terms of this experiment means essentially the addition of a limited supply of audiovisual equipment to the schools where student teaching occurred. The only materials added to the classroom situations were those indicated above, and those which were produced by the student teachers themselves. The audiovisual equipment purchased for the experiment was shared jointly by the Separate Course laboratories on campus, by the Self Study laboratory, and by the Student Teaching pattern.

In each student teaching location--both Elementary and Secondary--the students were distributed among a number of buildings, this being particularly true of the elementary program. The standard procedure for supplying equipment to the Saturated patterns was to provide each school with at least one piece of each type of equipment used in the experiment, in addition to a projection stand and a tripod screen. Each school thus was provided with one each of a 16mm sound motion picture projector, a combination slide-filmstrip projector, a record player, and a tape recorder. In addition to this equipment, enough overhead projectors and opaque projectors were supplied so that during the eight weeks these projectors could be rotated satisfactorily among the schools. Three different makes of 16mm projectors, filmstrip projectors and tape recorders were used in the experiment. Each student teacher thus had available the different makes of equipment upon which to practice. It was the responsibility of the instructor of this pattern to rotate the equipment so that a variety of experiences was obtained.

Part of the instruction in equipment operation in the Student Teaching pattern was handled in a formal classroom situation with the instructor, and partly on an individual basis as the instructor visited the student teachers. During the time the instructor was not present at a given teaching location--being either back at the University or visiting at another school--the student teacher was asked to practice on the equipment, both in and out of class, and to keep a log of the time spent. The student teachers were also encouraged to operate the equipment owned by the school if it was different from that supplied. No restrictions were placed on this additional learning since it was reasoned that this activity would be a natural requirement of the student teaching experience and would enhance familiarity with equipment operation.

Class work in the Student Teaching patterns, both Elementary and Secondary, Saturated and Non-Saturated, was carried on formally and informally. As a general rule, the students at each location met in one of the schools of the system after school hours, or in the evening, for a two-hour lecture-discussion-demonstration session. During this session the instructor would present the topic or topics for the evening, hold discussions related to the topics and to the teaching experiences the students were having, would demonstrate how to produce and utilize certain kinds of media, and provide group instruction on a particular piece of equipment. This procedure with equipment was typical of the Saturated pattern. In the Non-Saturated pattern the instructor assisted the student in learning equipment operation at each individual school, not in group sessions as a general rule. In some cases, particularly in the Secondary pattern, the students obtained additional assistance in equipment operation from the audiovisual coordinator of that school.

In addition to formal class work, at each location, the instructor set up a schedule of visits to each classroom where the student teachers were assigned. The typical period of time spent by each instructor at each student teaching location was two days, visiting classes during the day and holding the formal classes in the evening or late afternoon. Experience proved that each student teacher was visited in the classroom about three times in the course of the eight weeks by the audiovisual instructor. These visits were in addition to those made by the representatives of the University Education Departments responsible for the student teaching experience. The purposes of the visits by the audiovisual instructor were to observe use of audiovisual materials and equipment and to assist the student with teaching problems regarding media use. On occasion, the instructor would meet simultaneously with several students assigned to the same school, thus saving time in teaching operation of equipment and in discussing mutual problems.

To standardize procedures in the Student Teaching pattern, several forms were developed for use by the student teacher.

A Record of Classroom Activities required the student to keep a log of teaching in such a way that the student stated the objectives of the lesson, the audiovisual materials used, the problems encountered, and evidence of success or failure. To encourage independent use and practice on equipment, the students were required to record the name of the equipment practiced, the length of time spent in practice, and the number of times the equipment was actually used in teaching. To expedite the use of motion pictures, forms were provided for ordering from the University library. It must be pointed out that the student teachers used a considerable number of films, not only because they desired the experience, but also because the school systems where they taught took advantage of the free service.

2.32 Student Teaching Non-Saturated

The only difference between the Saturated and Non-Saturated treatments in Student Teaching was that the Non-Saturated groups were limited to the equipment supplied by the school system. All other activities of Student Teaching described above--other than equipment supplies--applied to both treatments.

2.4 Self Study

The fourth general pattern in the experiment was Self Study. In this pattern it was the responsibility of the instructor to provide an environment and learning experiences which would allow, as far as possible, the presentation of the entire audiovisual course in self-instructional fashion. Comments were made earlier that the sequence for the course as outlined in the Separate Course could not be followed in its entirety since some of the patterns did not lend themselves to that sequence. This situation was true with the Self Study pattern. Considering the fact that the students had to learn equipment operation within the scheduled three periods per week provided in the Self Study pattern, and considering the fact that they had to "run" their own films and filmstrips without the aid of an instructor, it was determined that the course sequence must be rearranged to give instruction in equipment operation first priority.

In the initial sessions, assistance was provided in the form of prerecorded taped instructions to which the students--a maximum of five in the room--listened through ear phones. (see photograph in Appendix) These instructions were placed on a long, continuous loop of magnetic tape, strung around appropriate rollers and threaded through the playback head of a recorder. This equipment was run from a room adjoining the Self Study lab. Earphones were available to the student while the tape ran continuously throughout the day. Motion pictures to be seen in the early stages of the course were presented via a continuous-loop 16mm projector, with earphone attachments. The filmstrips to be viewed in the introductory phases of filmstrip study were pre-threaded in regular projectors in some cases, and, in others, placed in electrically lighted filmstrip viewers.

As a general rule, the approach in the Self Study pattern was to lead students step by step through the course content and the operation of equipment by providing leading questions, specially prepared tapes, films, charts, posters and the like. For teaching equipment operation and associated knowledge, eighteen charts of varying sizes were prepared as self-instructional visuals. (see Appendix for photographic reductions of the charts) The charts were prepared by a professional artist in consultation with the instructors in the project. The procedure consisted of discussing the exact sequence of operations with the artist, who, in turn, prepared the charts by drawing from the piece of equipment placed in front of him. After the charts were completed and checked for clarity and ambiguities, they were duplicated by photo-offset and made available in quantity.

In the early experiences with self instruction, there was some question about using the charts in other patterns. It was finally reasoned that the experiment was concerned with a comparison of optimum conditions, rather than a comparison of minimum versus maximum use of materials. As a consequence, the charts were made available to the regular equipment laboratories and the Student Teaching variable, as well as to the Self Study pattern.

Self Study students met in a single room equipped with two long, sturdy tables on which were placed framed, hinged dividers. The dividers, soundproofed with an alpaca type material, provided isolation of adjoining activities. Sometimes differences among the students in completing assignments required differing activities occurring simultaneously in adjacent booths. The tables on which the partitions were placed were also used for display purposes. Students were directed to react to displays and bulletin board materials by means of cartoon type drawings, appropriate captions on the materials, and study sheets.

The general procedures followed during the four semesters of the Self Study pattern were essentially the same. Minor reorganizations in the sequence of the course were dictated by the needs of the students and the availability of equipment. In the first semester of the experiment, a monitor was provided in Self Study to log the time spent by each student in the laboratory during the three assigned periods a week. The students were required to remain in the laboratory only as long as they felt necessary to complete the tasks for the day. Thus, the monitor's purpose was not to inhibit freedom of movement by his presence. Records indicated this to be true in practice. After the first semester, the monitor was considered to be unnecessary. For the remaining three semesters the students themselves were asked to record the entry and exit times in their personal folders kept in the room. Records from the three semesters indicated that this procedure was faithfully carried out.

The first step in guiding students through the self-instructional procedures was to have the student obtain his folder from the file and record his entry time. Next the student would study the directions for the session contained in his folder or posted at appropriate places, using illustrations, charts, arrows, numbers and captions. Sometimes the student obtained his directions from both the folder and posted notices.

After each student had completed the assignments, e.g. reacting to displays, operating equipment, projecting a film containing content to be learned, listening to a tape recording and so forth, he would return the folder to the file, first recording the exit time. Upon demand, he would drop his completed assignment materials in an appropriate slot. This material was then collected at the end of the day and the instructor reacted, writing appropriate comments and returning the papers the next session for the student's enlightment and, sometimes, for further work.

Among the responsibilities of the students in Self Study was the requirement that they project all the filmstrips and motion pictures themselves. Under normal conditions projection would have been provided by the instructor in the classroom. Dependence upon the student thus demanded skill in equipment operation before motion pictures could be placed in student hands. As projector operation was learned, therefore, the instructor would check each student's skill, once that student had informed the instructor that he could perform satisfactorily. Whether it was the stimulus of attaining certain personal goals, or whether it was the realization that the availability of given content was dependent upon skill in equipment operation, only one film was damaged in the entire four semesters of student projection. In this case, it was suspected that the projector was at fault.

An additional factor in developing skill in operation was the use of specially prepared illustrations, and the instructional "set-ups" provided.

For example, the first step in learning about the operation of the 16mm projector required the student to simply turn on the power and to observe a continuous piece of pre-threaded film travel along the film path. To facilitate observation, half of the film was white leader and the other half regular black and white film. Gradually the students were lead to the point where they threaded "expendable" film themselves and practiced until the desired level of proficiency was obtained. In all of this practice, charts provided a step-by-step visualization of the process. (see Appendix)

2.5 Equipment Laboratories

A word must be included about equipment laboratories in discussing patterns of instruction in the experiment, since there were several ways in which the students in the various patterns were taught equipment operation. The standard pattern was a separate class period (50 minutes) set aside each week for an instructor-guided session. Each session consisted of an instructor-demonstration of equipment operation and a practice period. The instructor also provided individual guidance and the students were supplied with the operation charts prepared originally for the Self Study group. The two patterns receiving a regular instructor-guided laboratory period were the Separate Course and the Integration pattern in both the Elementary and Secondary curriculums.

The students in the Student Teaching patterns received instruction on equipment as part of formal class sessions, and partly on their own time in the schools where they taught, being assisted by either the cooperating teacher, course instructor, or the school's audiovisual coordinator. The student teachers were also provided with equipment operation charts.

The Self Study pattern was provided instruction during the regular sequence of their course as described earlier.

3. EXPERIMENTAL POPULATIONS

3.1 Sex, Semester Standing, Curriculum

The students included in the calculations for Phase One of the project were enrolled during three successive semesters, Spring 1960, Fall 1960, and Spring 1961. The project began in the Fall, 1959, but that semester's activities were regarded as a "dry-run" and hence were not included in the final data for Phase One.

Records indicate that a total of 923 students were involved in the three semesters mentioned above, including 615 women and 308 men. The ratio of two women to every man was generally consistent throughout the three semesters. The bulk of the population came from the curriculums of Elementary and Secondary Education. Table 3 shows the distribution of the population among the three semesters, classified by sex, curriculum and semester standing. The greatest number of students were in the sixth semester, or the second half of the Junior year, (365). The second greatest number were from the first half of the Senior year (177), with the second half of the Senior year as a close third (171). The fourth group in size was that enrolled in the fifth semester, or the first half of the Junior year (166). An analysis of the distribution by semester would reveal a slight shift in this order, but not a shift of significant size.

For various reasons, the total number of students included in the final calculations was reduced from 923 to 896, divided among the three semesters as follows: Spring, 1960, 209; Fall, 1960, 323; and Spring, 1961, 364.

A breakdown of the population by curriculums indicates that the greatest number of students (352) were from the Elementary Education Department. The next greatest number (324) were from the Secondary Education Department. The remainder (247) were divided among Art

TABLE 3. Composition of Experimental Population - Phase One
(By Sex, Curriculum, and Semester Standing)

CURRI-	MALE			FEMALE			4th Sem.			5th Sem.			6th Sem.			7th Sem.			8th Sem.		
CULUM	S60	F60	S61	S60	F60	S61	S60	F60	S61	S60	F60	S61	S60	F60	S61	S60	F60	S61	S60	F60	S61
EK ED	2	3	4	78	128	129	4	1	0	8	104	12	47	3	114	2	19	3	19	2	4
SEC ED	29	66	70	30	57	74	0	1	1	3	19	5	28	14	91	8	81	13	20	7	33
A ED	3	3	6	16	5	11	0	0	0	2	0	0	16	0	14	0	6	2	1	1	1
MU ED	4	4	4	3	2	8	0	0	0	0	0	1	0	1	0	0	3	1	7	2	9
PH ED	10	19	11	3	15	4	0		0	0	1	1	0	2	9	0	21	1	13	10	3
I ARTS	5	7	18	0	0	0	0	0	0	1	2	3	2	1	7	0	4	3	2	0	5
A L	3	2	3	5	5	9	0	0	0	0	1	0	2	1	3	0	4	1	5	1	9
OTHERS	10	11	11	13	7	13	0	1	1	0	1	2	9	1	4	0	5	0	8	2	7
TOTALS	66	115	127	148	219	248	4	3	2	14	128	24	104	23	238	10	143	24	75	25	71
GRAND TOTALS		308			615			9			166			365			177			171	

	GRAD			SPEC		
	S60	F60	S61	S60	F60	S61
TOTALS OTHERS	3	7	8	4	5	8
GRAND TOTALS		18			17	

Education, Music Education, Physical Education, Industrial Arts, Arts and Letters, Business Education, Psychology, Chemistry, Journalism, History, Rural Sociology, Biological Sciences, Vocational and Industrial Education, Recreation Education, Counseling, Zoology, Forestry, Social Studies, Graduates and Special Students.

3.2 General Ability

The criterion used to determine general student ability was the so-called Cumulative Average which each student had acquired by the time he enrolled in the course used in this study. The Cumulative Average was determined by final grades in all courses taken at the university and was based upon a four point scale, with an "A" -or perfect average-equivalent to "4", a "B" equivalent to a "3", and so forth down the line. Table 4 indicates a population (890 students) which was fairly homogeneous in terms of achievement, based upon mean Cumulative Averages.

TABLE 4. Cumulative Average of Experimental Populations

	Spring 1960	Fall 1960	Spring 1961	Average
CA	2.53	2.49	2.55	2.52
SD	.468	.434	.486	.463
N	206	323	361	890

As a gross comparison of general student ability, a "t" between mean Cumulative Averages was calculated for each semester. There were no significant differences between groups, using 5% or better as the level of significance, in comparing Spring 1960, versus Fall 1960; Spring 1960, versus Spring 1961; and Fall 1960, versus Spring 1961.

As a check on the differences which might have existed among subgroups in the experiment on the criterion of Cumulative Average, calculations were made comparing all of the subgroup CA means. Out of eighty-one (81) possible combinations for all three semesters, there were eleven (11) comparisons (arrows) which revealed a significant difference among subgroups on the criterion of Cumulative Average at the 5% level c better. Table 5 indicates the differences among subgroups. Note in the Spring, 1960 that the Elementary and Secondary groups in the Integration and the Student Teaching patterns were combined.

Where the comparison of the cumulative averages among the subgroups revealed a significance in favor of any one group over another, a study was made to determine whether the advantage in the cumulative average carried over to the performance on four of the post-experiment examinations taken by all groups. Table 6 summarizes the performance of the subgroups involved in the eleven cumulative average comparisons, arranged to reveal the size of each group and the performance of a particular group with a significantly higher cumulative average on the final examinations in the course. It should be noted that in some instances the significant cumulative average advantage of a particular group did not result in a significantly better performance on the final examinations in the course over the groups which had the lower cumulative average. In fact, there are several occasions in which the superior performance in the final examination was reversed in favor of the group with the lower cumulative average.

Close examination of reasons for superior performance on final course measures by groups with a significantly higher cumulative average (Table 6) may lead one to discount the cumulative average advantage as an important factor in group differences. In the case of the comparison of the Separate Course advantage on the Information Test over the Student Teaching Non-

TABLE 5. Comparison of Cumulative Averages Among Subgroups

		Sep C	Int S	Int E	STNS	STNE	STSS	STSE
Sep C	S60							
	F60							
	S61							
Int S	S60	0.79						
x	F60	0.38						
	S61	1.28						
Int E	S60	0.79	-					
x	F60	0.93	0.46					
	S61	1.27	1.98					
STNS	S60	↑+2.11	1.46	1.46				
xx	F60	0.60	0.25	0.16				
	S61	0.89	1.57	0.13				
STNE	S60	↑+2.11	1.46	1.46				
xx	F60	1.41	0.99	0.59	0.69			
	S61	0.82	0.30	1.64	1.29			
STSS	S60	0.03	0.26	0.26	1.59	1.59		
xxx	F60	1.34	1.41	1.69	1.49	1.98		
	S61	3.57 ←+	3.94 ←+	2.08 ←+	1.99	3.60 ←+		
STSE	S60	0.03	0.26	0.26	1.59	1.59		
xxx	F60	1.93	1.90	2.22 ←+	1.79	2.46 ←+	↑0.11	
	S61	0.82	0.36	1.65	1.29	0.04	+5.65	
Self	S60	0.11	0.58	0.58	1.90	1.90	0.26	0.26
Study	F60	1.21	1.21	1.63	1.29	1.95	↑0.69	1.01
	S61	1.67	2.34 ←+	0.15	0.26	1.94	+2.08	1.97

x Integration combined, Spring 1960
xx STNon-Saturated combined, Spring 1960
xxx STSaturated combined, Spring 1960
+ Sign. 5% or better in favor of arrow direction

TABLE 6. Comparison of Cumulative Average Advantage With Performance on Final Course Measures

Cumulative Average Advantage*									
	N			N	Sem.	Inform.	Attit.	Pict.	Lab Written
Sep C	(102)	over	STNS	(10)	S60	x			x
Sep C	(102)	over	STNE	(16)	S60	x		xx	x
STSS	(21)	over	SEP C	(163)	S61	xx			xx
STSS	(21)	over	Int S	(38)	S61	xx			xx
STSS	(21)	over	Int E	(23)	S61	xx			
STSS	(21)	over	STNE	(26)	S61				x
STSE	(22)	over	Int E	(23)	F60				
STSE	(22)	over	STNE	(16)	F60	x			
STSS	(21)	over	STSE	(24)	S61				
Self S	(49)	over	Int S	(38)	S61	xx			
STSS	(21)	over	Self S	(49)	S61				xx

x Indicates significant difference on course measures in favor of group with Cumulative Average Advantage

xx Indicates significant difference on course measures in favor of group with lower Cumulative Average. (The significances, x and xx, at the 5% level or better, are out of 81 comparisons on each measure)

* 5% or better significance

Saturated Secondary and Student Teaching Non-Saturated Elementary in the Spring 1960, the small numbers in the latter two groups give reason to suspect that the smaller groups were not truly random in character as one would expect of the Separate Course group, ten times the size chosen from the same population. This could account for a lower cumulative average for the two smaller groups and hence a presumed disadvantage on the Information Test. The opportunities in the Separate Course pattern for adequate presentations of information over the opportunities in Student Teaching may have been the real advantage.

The superiority of the Separate Course groups over the two Student Teaching groups, mentioned in the previous paragraph, on the Laboratory Written test may be accounted for by the fact that the Separate Course groups had had a formal laboratory experience while the Student Teaching groups, by the very nature of the pattern, had had less chance for thoroughness in the laboratory--or equipment operation--part of the instruction. Thus, the Separate Course advantage in the Laboratory Written examination over the Student Teaching groups is a true advantage in terms of knowledge gained.

Another contributing factor for the advantage of the Separate Course groups over the Student Teaching Non-Saturated groups is the fact that the latter had to depend upon the equipment which was available in the schools where the student teaching experience took place. This conclusion is also supported by the superiority shown on the Laboratory Written test by the Student Teaching Saturated Secondary group over the Student Teaching Non-Saturated Elementary group. The Secondary group had equipment added to their teaching location from the equipment pool of the experiment and hence more opportunities to learn about equipment.

Looking at the data in Table 6 from another point of view, one may compare the number of times where the advantage on the final course measures was actually in favor of the group with the significantly lower Cumulative Average as against the number of times the performance was in favor of the higher Cumulative Average groups on the same measures. There are eight cases of advantage for the lower groups as against six for the higher groups in Cumulative Average. Considering the potential of eighty-one comparisons for each of four final course measures--or 324 comparisons--

six cases where the advantage on Cumulative Average also proved an advantage on final course measures seems hardly conclusive enough to say that some groups indeed had an advantage because of a significantly higher Cumulative Average.

3.3 Assignment to Patterns

The design of the experiment called for the randomization of a student population among four patterns of instruction. Since most of the population came from the two curriculums of Elementary and Secondary Education, it was necessary to work most closely with these two groups in the randomization procedure.

The experiment began officially on July 1, 1959, a few months before the beginning of the Fall Semester, during which time the randomization procedure was planned to affect the assigrment of students to the various experimental patterns. For the entire experiment, this proved to be a manipulation of 250 students (Fall 1959); 206 students (Spring 1960); 323 students (Fall 1960); and 361 students (Spring 1961).

The one pattern which required first priority in randomization was the Student Teaching variable. This priority was necessary because the students identified for Student Teaching had to defer enrollment in the basic audiovisual course until the semester of their student teaching. Normally the audiovisual course would have been scheduled during the semester when the students also enrolled for the methods course which generally preceded the student teaching experience.

Several complicating factors in assigning students to the Student Teaching pattern as an arbitrary procedure were, (1) the fact that the Elementary and Secondary Departments differed in the amount of time each Department controlled the students in the "block" scheduling of professional courses, and (2) the greater complexity in the Secondary curriculum in having Juniors and Seniors meet the course requirements of majors and minors.

3.31 Assignment of Students from Elementary Education

The arrangements for "block scheduling" in the Elementary Education Department facilitated the placement of students in the various patterns for the Fall of 1959. "Block scheduling" meant placing students in groups for their professional semester. One half of the semester was devoted to student teaching and the other half to on-campus considerations of methodology and materials in science, social studies, mathematics, language arts, and the like. Students thus assigned to student teaching groups also remained in these groups for on-campus activities. In the experiment, the Student Teaching and Integration patterns were selected from these "block scheduled" groups.

In the selection of Student Teaching groups for the Fall 1959, random selections were made from among those already identified the previous Spring. Once the Student Teaching patterns were selected (a Saturated pattern for the first eight-weeks and a Non-Saturated pattern for the second eight-weeks), an Integrated pattern was selected from among the remaining student teaching groups. Table 1, p. 11, indicates the Student Teaching groups assigned to the Integrated pattern.

The students assigned to the Separate Course and Self Study patterns from the Elementary curriculum were selected at random from among those students remaining who were not scheduled for Student Teaching or Integration in the Fall semester, 1959. From these students, four groups of fifteen each were placed at random in arbitrarily selected sections of the audiovisual course. Advisors of these students were informed of the assignments and were given specially prepared enrollment cards to facilitate registration.

Students were assigned to the Self Study pattern by a system which applied identically to both the Elementary and Secondary curriculums. The procedure was essentially random assignment by elimination. That is, once the semester enrollment procedures were completed and the rosters in each Separate Course section identified, then random numbers were applied to those in sections and a certain number of students "extracted" from each section to make up a Self Study group of a pre-determined size. Thus, in summary, the Student Teaching and the Integrated sections of the experiment in the Elementary curriculum were determined by a random selection of students from groups pre-determined by student teaching assignments determined by the Department in the previous Spring. The Separate Course sections were composed of students randomly assigned from the remainder of students in the Elementary Curriculum. The Self Study group was determined by a random selection of students from those already enrolled in the Separate Course sections.

3.32 Assignment of Students from Secondary Education

It was not possible to select Student Teaching groups from Secondary Education, Fall 1959, because the students in the groups had already taken the audiovisual course during the previous Spring semester. This was due to the normal requirement for students in the Secondary Education Department that they complete the audiovisual course prior to student teaching.

In the Fall, 1959, therefore, populations for the Student Teaching variable in Secondary Education could only be selected for the following semester, Spring 1960. This was accomplished during normal registration procedures at the University. Ten sections of the basic course had been scheduled to provide for anticipated enrollments in the Fall, 1959. Out of these ten sections, four had been designated for the Separate Course pattern, with fifteen places--out of twenty-five--reserved by random procedures for Elementary students selected from a common list determined prior to Fall registration. To select forty-five students for the Student Teaching pattern in Secondary Education for the Spring, 1960, therefore, it was necessary to assign random numbers to the spaces remaining in the ten sections of the course. Forty-five were selected out of the total number of sections in such a way that each section contained randomly sequenced "marked" registration cards.

During the registration procedure, each time a Secondary student appeared to register for the basic audiovisual course, and his appearance coincided with the presence of a "marked" card in the normal sequence of cards issued, that student was handed a sheet informing him of the experiment and advising him to drop the audiovisual course and to substitute another in its place. He was informed that he would be taking the audiovisual course in conjunction with his student teaching experience in the Spring, 1960. The only exception in assigning a Secondary student by this procedure occurred when the student arrived at registration already assigned to a section previously reserved for Integration with a Secondary Education general methods course.

The Integration Secondary pattern was set up in the Fall, 1959, by arbitrarily selecting two of several sections of the general-methods course for Integration. Pre-registration information concerning this selection was distributed to advisers directing that when a student was assigned to either of these two sections of the general-methods course, the adviser should be certain that the student also scheduled a given section of the audiovisual course. During the Fall, 1959, the students attended both courses--scheduled consecutively during the day. For the three succeeding semesters, the scheduling and procedures were altered to allow a more complete integration by scheduling common hours for the combined audiovisual course and the general-methods course.

The random assignment of Secondary students to the Separate Course was determined only by the random appearance of the students at registration and the "chance" assignment to a given section. To some extent these students were randomly assigned by virture of their equal chances with other Secondary students that they may have been assigned to either Student Teaching or Integration as they appeared for registration. Once these students became members by chance of the course sections assigned to the Separate Course pattern, they still had an equal chance to be assigned from the Separate Course pattern to the Self Study pattern. It will be recalled that a random selection was made from Separate Course sections to form a Self Study pattern.

In a way, then, one could say that assignment to patterns in this project was randomization by a process of elimination. Selection was made by random or quasi-random methods with the following order of priority, Student Teaching, first; Integration, second; Separate Course, third; and Self Study, fourth.

3.33 Changes in Assignment Procedures

Recognizing the expedient methods in the Fall, 1959, used for assigning students to the various methods, attempts were made to improve randomization procedures. This was done by identifying early in the Fall semester the students to be placed in given patterns for the duration of the experiment, that is, for the three semesters succeeding the Fall Semester, 1959.

The selection of students for the entire experiment far in advance of actual registration was required by the complexities of University scheduling. This was especially true of the Secondary Curriculum because of the problem of scheduling courses to meet major and minor requirements.

In the Elementary curriculum, the "block" system of scheduling made it relatively simple to identify groups of students. Later complications--to be discussed shortly--required a different approach, and also affected plans for scheduling the Secondary students. As background for the change, some discussion is in order.

In the Secondary Education curriculum there were two courses--designated by the numbers 251 and 252--required of all students planning to participate in the student teaching experience. These courses were scheduled sequentially in the two semesters preceding student teaching. The course numbered 252 was the one used for the Integration Secondary pattern and was the course which immediately preceded student teaching. In order to identify students for random assignment to both the Integration pattern and the Student Teaching pattern several semesters in advance, it was necessary to obtain information from the students while they were enrolled in the course numbered 251. In other words, in the Fall, 1959, the project director visited the "251" classes to obtain a list of names of Secondary students from which to make random assignments to the Student Teaching and Integration patterns for succeeding semesters. Information about the major and minor of each student was obtained in order to subrandomize assignments within each Student Teaching pattern and to provide the balance in teaching areas required by a given teaching location. Knowledge that the student had planned student teaching for a given semester thus made it possible to determine when to assign students to the Student Teaching pattern.

During the Fall Semester, 1959, students were identified for the Student Teaching and the Integration Secondary patterns using random assignment techniques. Instructions were prepared to inform the students and their advisers of these assignments in time for the registration period, Spring, 1960. Those whose names appeared on the lists for student teaching assignments were advised not to schedule the audiovisual course during the Spring Semester, as would normally have been the case, but to defer registration in the course until the semester of their student teaching.

Those students whose names appeared on the list for the Integration Secondary pattern were informed through their advisers to schedule a certain audiovisual course with their general-methods course. This was double checked during the semester registration period. The purpose for this was to provide a juxtaposition in time of the general-methods course and the audiovisual course to provide for convenience of integration.

All the remaining students in the Secondary curriculum not on the list for Student Teaching or the Integration Secondary were allowed to enroll for any of the remaining sections of the audiovisual course. The exceptions were those for whom sections had been set aside for the Integration patterns already discussed above. From the students thus enrolling in the "open" sections of the course, there were set up the Separate Course pattern and the Self Study pattern. A specified number were selected at random from each of the sections to make up a Self Study section. The remainder becoming the Separate Course sections.

By following this procedure it appeared, by the beginning of the Spring Semester, 1960, that the randomization had finally been settled and the populations dispersed among the experimental patterns through properly controlled experimental techniques. This would have remained a certainty, however, if one could have completely controlled the most difficult variable of all, the human being and his drives and motivations.

Soon after the registration period opened for the Spring, 1960, it was discovered that student plans which seemed so certain in the previous Fall were, indeed, not certain at all in the Spring. The carefully developed lists of students, randomly assigned to the Student Teaching patterns for the succeeding three semesters, suddenly became meaningless. For various and sundry reasons, among which were marriage plans, financial difficulties, curricular changes, conflicts with "only-one-section" courses, personal plans-in opposition-to-being-assigned-a-given-student-teaching-location, it became necessary to make some immediate changes in assignment procedures.

Within the first week of the Spring Semester, 1960, the principal faculty and administrators affected by the experiment had a meeting with the project Director to resolve the problems which had arisen. This involved the Elementary Education Department as well as the Secondary Department because repercussions on student teaching assignments came from that quarter as well. Basically it appeared that University populations could not be manipulated without violating personal needs and the curricular necessities. It appeared also that arbitrarily assigning students to student teaching locations which separated them from their friends and which placed them in regions where they did not prefer to go, would result in such animosity toward the experiment as to prejudice the performance of the students in the Student Teaching pattern. Problems of course changes and similar difficulties also affected the lists for Integration Secondary.

To resolve the problems which had developed, the following procedures were agreed upon and were applied to the Spring Semester, 1960, as far as possible and completely to the Fall and Spring Semesters, 1960-61.

1. In both the Elementary and Secondary curriculums, the students were allowed to select their own student teaching center. After the selection had been made, a random selection was made of the center to receive the Student Teaching pattern.
2. In the Elementary curriculum, selection of the Integrated pattern was made from among the student teaching groups after the students had made their student teaching choice. In the Secondary curriculum, the students were allowed to enroll for the regular sections of the general-methods course. From among the sections of this course, a section was selected at random to receive the Integrated pattern.
3. Any person who had already completed the audiovisual course and by chance had appeared in either the Secondary Student Teaching pattern or the Integrated pattern was asked to change sections.
4. To minimize personnel changes in student teaching groups once the selection of the Student Teaching pattern had been identified, no student was allowed to make a change in plans.
5. No information was released to students concerning the location of the experimental student teaching centers until after all details had been completed. This procedure prevented student selection or avoidance of a center because of the experiment.

4. EQUATING AND EVALUATION INSTRUMENTS

As was indicated earlier, the basis for determining the comparative abilities of the groups involved in the experiment was the Cumulative Average that each participant had achieved by the time he became involved in the experiment. Calculations made of the Cumulative Average differences among the various groups in the experiment proved that there were no large and significant differences on the Cumulative Average measure. (Tables 4, 5, 6) It was assumed, therefore, that the groups in the experiment were indeed random and equivalent groups.

In addition to the use of the Cumulative Average, there were six other measures used in the course. These were the Bennett-Fry Test of Mechanical Comprehension, Part BB; an information test; a picture test; an attitude scale; a laboratory written test; and a laboratory performance test. With the exception of the latter test, the remaining five were used as pre and post measures. It was impossible logistically to test each individual on his ability to operate selected pieces of audiovisual equipment at the beginning of each semester, hence the elimination of the laboratory performance test as a pre-course measure.

4.1 The Bennett-Fry Test of Mechanical Comprehension, Part BB

In the initial phases of the experiment the Bennett-Fry Test of Mechanical Comprehension, Part BB was judged to have a possible relationship to the "equipment-manipulation-and-understanding" parts of the course. It was intended to predict those students who may have had difficulty with the mechanical aspects of the course. Low correlation of the Bennett-Fry with several tests which were directly based upon the understanding and the operation of audiovisual equipment, however, indicated the general inadequacy of the Bennett-Fry as a predictor. One was a written test requiring identification of equipment and a knowledge of "trouble-shooting" procedures. The other was a timed test requiring the operation of selected pieces of equipment.

Correlations over three semesters between the Bennett-Fry and the laboratory written test ranged from .047 to .47. The Bennett-Fry correlated with the laboratory performance test over three semesters from .05 to .35. While the correlations in every case are in a positive direction, it was judged that the correlations were not of sufficient magnitude to use the Bennett-Fry as a predictor of success in the laboratory aspects of the course. It appears that the Bennett-Fry test measures a type of mechanical comprehension not common to the skills and understanding required to operate audiovisual equipment. The coefficients of correlation of the Bennett-Fry with all other measures of the course (discussed below) indicated in most cases a positive correlation. All correlations were of considerably less magnitude, however, than those indicated above.

4.2 Information Test

This instrument measured the general and specific comprehension and knowledge of the student concerning the material presented in the formal class work in the project. It was not related to the laboratory aspects of the course. Formal class work, in the strictest sense, meant using as a base the content presented in the Separate Course pattern. As was discussed earlier in this report, this content was presented in differing sequences, depending upon the characteristics of the pattern in which it was presented. It should be noted, however, that attempts were made in each of the four patterns to keep the content constant.

In the Fall, 1959, a fifty-item information test was used. At the end of the semester, the staff of the project and a testing expert reviewed the results and revised the items. The revised fifty-item test was then used as a pre and post measure in the Spring, 1960. At the end of the semester, the test was validated by the use of an item relationship technique.[1] This involved tabulating student responses to each test item and developing a chart containing two dichotomies. One dichotomy involved student answers for correct or incorrect responses. The other dichotomy was the students' total score above or below the mean of the test. The equation is:

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[1] H. M. Davison, "A Measure of Item Validity," Penn State Review of Educational Research, Vol. II, No. 1, p. 83. July 1950.

$$IR = \frac{(b+c) - (a+d)}{a + b + c + d}$$

a - The number of students who answered the item incorrectly and had scores above the mean of the test.

b - The number of students who answered the item correctly and had scores above the mean of the test.

c - The number of students who answered the item incorrectly and had scores below the mean of the test.

d - The number of students who answered the item correctly and had scores below the mean of the test.

IR - Item relationship.

With an IR for each item of the test, the project staff revised the test, keeping questions with a high item relationship and discarding or revising items with low IR. As an attempt to increase the test reliability, ten new items were added, thus increasing to sixty items the information test used in the Fall, 1960, and in the Spring, 1961. A comparison of the number of items with an acceptable Item Relationship in the fifty-item test with the sixty-item test indicated an increase in the percentage of acceptable items by 100%. Stated in numerical terms, the fifty-item test contained 30% acceptable items. The sixty-item test contained 60% acceptable items.

The information test reliability was checked with pre to post r's. The split-halves-Spearman-Brown technique yielded .6168 on the sixty-item test for the Fall, 1960. Kuder-Richardson r's ranged from .41 to .49 on the sixty-item test and .44 to .52 on the fifty-item test. Kuder-Richardson r's on combined pre and post information tests (doubling the population) yielded .8331, Fall, 1960, and .6970 for the Spring, 1961.

4.3 Picture Test

The picture test consisted of thirty items (in its original form) composed of line drawings to represent a variety of items related to the field of audiovisual education. In a sense, this was a type of information measure, except that the information was presented in graphic form. In another sense, the picture test measured the awareness of the nomenclature associated with the audiovisual course. Some examples of the items are included in the Appendix to this report. Drawings represented, among other things, a cutaway, a diagram, record player, cartoon, specimen, pict-o-graph, diascopic projection, mercator projection, puppet and so forth.

At the conclusion of the Fall Semester, 1959, the picture test was analyzed according to the Item Relationship technique explained in the preceding discussion of the information test. Revisions were made in the test, retaining fifteen of the thirty items which had acceptable IR levels. In the actual testing situation this meant that students matched only fifteen items on the answer sheet from among thirty graphics.

The revised answer sheet was intended to be used for three semesters, Spring, 1960; Fall, 1960; and Spring, 1961. Due to an oversight, it was discovered during the pre-testing period in the Fall, 1960, that the thirty-item answer sheets had been inadvertantly stuffed in the testing envelopes. As a result, it was necessary to give the populations for the Fall, 1960, the thirty-item picture test for both the pre and post testing in this area.

Reliability measures on the picture test showed a large spread; from .036 to .29 (Kuder-Richardson r's) on the fifteen-item test; from .29 to .38 on pre to post r's, also on the fifteen-item test. The thirty-item test yielded .38 to .43 (Kuder-Richardson) and .43 from the pre to post r.

The Spearman-Brown formula applied to doubling the length of the fifteen-item test yielded .4509, which compares favorably to .43 (Kuder-Richardson) for the thirty-item test.

Item analysis of the fifteen-item test for the Spring, 1961, showed up well. Although there was a spread from -.07 to .45, only four of the items were below .22, with only one being below .16, using .20 as the acceptable level of item reliability.

4.4 Attitude Scale

The attitude scale used in this study consisted of forty items in its original form. It was set up to require response on a continuum to statements about the use of audiovisual materials and the place of these materials in education generally. The continuum was: Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree. The forty-item test was used during the Fall Semester, 1959, as a pre and post measure of attitude toward the use of audiovisual materials in teaching. At the end of the Fall Semester, 1959, the scale was refined to fifteen items using the Guttmann[2] technique to find coefficients of reproducibility. Table 7 summarizes the coefficients of reproducibility obtained by the Guttmann technique. The fifteen-item scale was used during the Spring, 1960; Fall, 1960; and Spring, 1961. Pre to post correlations ranged from .35 to .57

The application of the Guttmann type analysis indicated that the

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[2] Louis Guttmann, et al. Studies in Social Psychology in World War II, Vol. 4 (Princeton, N.J., Princeton University Press. 1950). pp. 456-458.

TABLE 7. Reproducibility Coefficients for Attitude Scale - 15 Items:

Item number revised test	Item number original test	Coefficient original 40-item test	Coefficient Spring 1960 pre N=113; two categories	Coefficient Spring 1961 post N=165; two categories used	Coefficient Spring 1961 post N=165; rescored on right-wrong basis
1	2	.74	.73	.70	.69
2	19	.61***	.82	.73	.78
**3	-	-	.70	.73	.72
4	6	.61***	.82	.78	.75
*5	21	.92	.84	.75	.76
*6	26	.86	.73	.74	.76
7	11	.83	.87	.82	.85
*8	7	.89	.79	.78	.80
*9	9	.88	.76	.73	.75
10	1	.83	.90	.87	.87
11	31	.83	.74	.75	.78
12	3	.83	.74	.73	.74
13	4	.82	.78	.78	.81
*14	40	.87	.81	.82	.88
*15	-	-	.80	.82	.87

* Indicates items from original test having coefficients of .85 or better originally.

** Indicates items _not_ contained in original test.

*** Indicates coefficients "reconstructed" from original tabulations. These two items were not among the original 15 high coefficients.

attitude of the students as measured by the attitude instrument was generally not scalable. It must be noted, however, that there is a progression of scores from strongly pro AV to somewhere near undecided and the total score can be taken as an indication of the intensity of feeling toward AV. For this reason the scores are a legitimate basis for correlation with the other measures. The reduced spread of these scores is reflected generally in the low correlations.

Rescoring the items on a "right-wrong" basis (Spring, 1961) and reapplying the Guttmann technique did not yield many increases in reproducibility coefficients.

The attitude instrument was consistent from semester to semester in two ways: there were generally no significant differences between pattern on either attitude scores or attitude gains and, the correlations of attitude scores with the other measures were generally quite low.

4.5 Laboratory Written Test

The laboratory written test (see Appendix) measured the understanding of the students relative to audiovisual equipment. This was not a performance test but one which required a conceptualization about equipment care, trouble-shooting, threading of projectors, and identification of types of equipment. Part of the test required the student to draw the path of film for each of the three makes of motion picture projectors used in the course. Through matching and completion questions, the students were required to identify types of equipment and to suggest solutions to various problems associated with their use. Through a number of multiple choice questions, basic information was tested concerning the proper use of equipment.

Table 8 indicates the coefficients of reliability which were calculated for the laboratory written test.

TABLE 8. Coefficients of Reliability (Kuder-Richardson)
Laboratory Written Test

	Spring 1960	Fall 1960	Spring 1961
Post test	.74	.66	.67
(Total population)	N-207	N-323	N-361
Post test		.59	.54
(Separate Course pattern)		N-166	N-163

Item analysis performed on the Separate Course post-test results, Spring, 1961, showed generally good coefficients. The projector threading diagrams on the other hand, discriminated poorly. Excluding the three threading diagrams, the IT coefficients on the other items in the test ranged from +.14 to +.49 with only four items falling below .25.

4.6 Laboratory Performance Test

As was indicated earlier in this report, the laboratory performance test concerned with the operation of audiovisual equipment was given only at the conclusion of instruction. Problems of logistics prevented the use of this measure as a pre-test.

For testing purposes the students were required to learn the operation of the following pieces of equipment: 16mm motion picture projectors - (Bell and Howell, Victor, RCA); 35mm filmstrip-slide projectors - (Viewlex, Victor Soundview, Graflex); tape recorders - (VM, Wollensak, Webcor). Additional equipment included overhead projectors, record players, and opaque projectors. These were not included in the final performance testing because observations indicated that the students learned to operate them with little difficulty.

Because of the nature of the Student Teaching pattern, it was not possible to include the students from these patterns in the regular procedures for testing the operation of selected pieces of equipment. Circumstances required that the students in the Student Teaching patterns demonstrate their proficiency in the operation of equipment on-location in the student teaching centers. As a consequence, data from this testing was not included in the comparisons among patterns on this measure.

The standard procedures employed in the Separate Course, Integration, and Self Study patterns were the following. Each laboratory section contained about 12 students each, made up of students from each of the three patterns. Each group of twelve met for testing as a group. For testing purposes the group was divided into three equal sections and assigned to one of three testing stations. One station contained the three makes of 16mm motion picture projectors indicated earlier. At a second station were three makes of 35mm filmstrip-slide projectors. At the third station were the three makes of tape recorders. During the testing period, the three sub-groups of students were rotated among the three stations. At each station, the students drew numbers which determined the specific piece of equipment each was to operate. At a given signal from the proctor at each station, the students demonstrated their ability to operate the piece of equipment to which they were assigned. Each proctor was provided with a checklist for each make of equipment under his jurisdiction. Each student was required to complete all of the steps listed on the checklist within a pre-determined time limit. The score the student obtained was a sum of the steps missed or done incorrectly, subtracted from the total number of steps completed within the prescribed time. (see Appendix for check list)

Coefficients of reliability for the performance test were computed for the Fall, 1960, and the Spring, 1961, (Kuder-Richardson). They were, respectively, .79 and .73.

4.7 Correlations Among Tests

A summary of the pre to post correlations on the information, pictorial, laboratory written tests and the attitude scale can be seen in Table 9.

TABLE 9. Pre to Post Inter-Correlations - Four Measures - Total Populations

-	Spring 1960	Fall 1960	Spring 1961
Information test	.48	.38 (split-half) .62	.37
Attitude scale	.57	.35	.39
Picture test	.29	.43	.38
Lab written test	.52	.39	.24

The pre to post inter-correlations indicate a fairly consistent correlation from semester to semester, with the exception of the laboratory written test. It will be noted that the coefficient of correlation became progressively smaller from semester to semester. An analysis of the relevant data in this situation did not reveal any logical explanation for this change in correlation. For example, a study of the pre and post means and standard deviations on the laboratory written test indicated that there were no significant differences among the total populations from semester to semester. A study of the Cumulative Averages came to the same conclusion. This reduction in size of correlation is puzzling also in light of the coefficients of reliability (Kuder-Richardson), Fall, 1960, .66 and

Spring, 1961, .67, and the fact that the identical test was used each semester. If information concerning the test had been passed from the students in one semester to the students in the next semester, one would expect a change in the means and standard deviations of each succeeding semester. The evidence, however, does not support this position. This information, together with a comparison of the Cumulative Averages of the total populations for each semester, is included in Table 10.

TABLE 10. Means and Standard Deviations - Laboratory Written, Cumulative Average - Total Populations

	Laboratory Written						Cumulative Average		
	Pre			Post			Pre		
	Mn	SD	N	Mn	SD	N	Mn	SD	N
Spring 1960	6.98	4.95	202	20.80	4.95	207	2.53	4.68	208
Fall 1960	6.98	4.62	305	20.34	4.25	323	2.49	4.34	323
Spring 1961	4.38	4.19	364	19.33	4.40	364	2.55	4.86	364

Table 11 summarizes the pre-pre and post-post correlations among the various measures used in the experiment. Out of 82 possible comparisons, 72 indicate positive correlations and 10 negative correlations. Of the 72 positive correlations, only 8 are of a magnitude of .35 or over. Among these, 2 of the correlations relate to the pre-testing relationships, the picture test with the information test and the mechanical comprehension test with the laboratory written test. Six of the eight correlations at .35 or above relate to post tests. These correlations are cumulative average with information tests in two semesters, laboratory written test with the picture test in two semesters, and mechanical comprehension with laboratory written in two semesters.

TABLE 11.
Summary: Correlations Among Measures (Pre-pre and Post-post)

		Information		Attitude		Picture		Lab. Written		Lab. Perf.		Mech. Comp.	
		Pre-pre	Post-post	Pre-pre	Post-post	Pre-pre	Post-post	Pre-pre	Post-post	Pre-pre	Post-post	Pre-pre	Post-post
Information	Spring 60	--	.07										
	Fall 60	.09	.15										
	Spring 61	.08	.01										
Picture	Spring 60	--	.31	--	.10								
	Fall 60	.41	.32	.13	.10								
	Spring 61	.28	.30	.01	-.04								
Lab. Written	Spring 60	--	.35	--	.13	--	.27						
	Fall 60	.21	.32	-.02	.02	.28	.38						
	Spring 61	.11	.30	.04	.03	.31	.45						
*Lab. Performance	Spring 60	--	-.05	--	.08	--	.09	--	.22				
	Fall 60	--	.01	--	.09	--	.12	--	.20				
	Spring 61	--	.06	--	.02	--	.21	--	.36				
**Mech. Comp.	Spring 60	--	.10	--	.08	--	.02	--	.47	--	.26		
	Fall 60	--	--	--	--	--	--	--	--	--	--		
	Spring 61	.19	.05	-.02	-.10	.32	.28	.40	.40	--	.35		
Cumulative Average	Spring 60	--	.29	--	.12	--	.02	--	.19	--	.03	--	-.04
	Fall 60	.24	.38	.05	.05	.11	.01	-.05	.19	--	-.09	--	--
	Spring 61	.28	.41	.06	.09	-.02	.10	-.10	.11	--	.01	-.08	.08

* Pre tests on lab performance not possible logistically.

** Mech. Comp. not used Fall 1960.

It appears that negative correlations of small magnitude exist among the laboratory performance test and the information test, the laboratory written and the attitude scale, the mechanical comprehension test and the attitude scale, and the cumulative average with the picture, laboratory written, laboratory performance and mechanical comprehension tests.

4.71 Laboratory Written Test

The laboratory written test consistently correlated most highly with the Bennett-Fry Test of Mechanical Comprehension, Part BB, the picture test, the laboratory performance test, and the information test. The laboratory written test correlated relatively low with the attitude scale and the measure of cumulative average.

4.72 Information Test

The information test consistently correlated highest with cumulative average, and the laboratory written and picture tests. It correlated lowest with the laboratory performance and mechanical comprehension tests.

4.73 Laboratory Performance Test

The laboratory performance test correlated most highly with the laboratory written test and less consistently with the mechanical comprehension test. It should be recalled in the latter instance that the mechanical comprehension test was not given during the Fall, 1960 since it was judged to have low applicability to the experiment after an analysis made during the Spring, 1960. To double check this evaluation, the mechanical comprehension test was given again during the Spring, 1961. The results were not significantly different from those obtained a year earlier.

The laboratory performance test correlated least positively with the information, attitude, and picture tests, and with the cumulative average.

This would indicate that the laboratory performance test was indeed very specific to the learning it attempted to measure.

4.74 Picture Test

It is understandable that the picture test correlated most highly with the information and laboratory written tests, since all three of the tests could be regarded as information-type instruments. The picture test correlated least with the attitude scale and with the cumulative average.

4.75 Attitude Scale

In general, the correlations of attitude scores with the other measures were quite low. On the one hand it appears that the application of the Guttmann type analysis seems to indicate that the attitude of the students as measured by the scale was not generally scalable. It must be noted, however, that there is a progression of scores from strongly pro-audiovisual to somewhere near undecided. The total score may be interpreted as an indication of the intensity of feeling toward the use of audio-visual materials. It was on this basis that it was felt that the attitude scale was a legitimate basis for correlations with other measures, although the results indicated very low correlations.

The attitude scale was consistent in two ways. There were no significant differences among patterns on either attitude scores or gains. Attitude scores consistently correlated quite low with other measures.

5. STATISTICAL PROCEDURES

The statistical analysis in Phase One consisted primarily of the comparison of the various groups and sub-groups on mean performances achieved on the various measures used in pre and post testing. The assumption in using a comparison of mean performance, with the subsequent t-test of significance between means, was that the populations involved in the experiment were indeed random samples of the same parent population. To insure, also, that they were random samples and that the variabilities as individuals within groups was equally distributed among the experimental groups, a random assignment to experimental patterns was followed.

As was indicated earlier in the discussion of randomization procedures, attempts at "pure" randomization were thwarted by the intricacies and complications of a complex University scheduling system. Consequently, random assignment in some cases was characterized by a random assignment of method or pattern to an existing group of students already assigned, for example - to student teaching. Thus, it could be assumed that part of the randomization was in fact a "quasi-randomization" and that differences among groups would likely show up because of the lack of complete randomization. To overcome these shortcomings, analysis of covariance was used, employing the Cumulative Average of each sub-group as the adjusting factor. An analysis of the differences among groups and among the total populations for each of three semesters proved that there were no significant differences in mean Cumulative Averages.

6. RESULTS - PHASE ONE

6.1 Review: Experimental Procedures

Briefly, the basic objective of Phase One of this experiment was to compare the relative effectiveness of four patterns for preparing preservice teachers to utilize audiovisual materials and equipment in their teaching. The four patterns were the Separate Course, Integration, Student Teaching, and Self Study. Four semesters were involved in the comparison of patterns, although the last three semesters were used as the basis for the statistical evaluations since the first semester was regarded as a "dry-run."

Comparisons were made among the patterns on the basis of a number of tests. Pre and post measures consisted of an information test, a laboratory written test, a picture test, and an attitude scale. A laboratory performance test was used as a post measure in all patterns, with the exception of the student teaching patterns where logistics and circumstances prevented equal conditions for testing.

On several occasions, discussed previously, the Bennett-Fry Test of Mechanical Comprehension, Part BB was used as a pre and post measure to assess its relationship to the laboratory portions of the course. Evidence proved that this test was of limited value as a predictor of success in the laboratory activities.

The Cumulative Average that each student had achieved during the semester prior the student's involvement in the experiment was used as an equating measure, and as an adjustment factor in the analysis of covariance used in determining differences among patterns and semesters.

The students involved in the experiment were Juniors and Seniors in the teacher education curriculums of The Pennsylvania State University, with the addition of a relatively small number of students from other curriculums who desired to acquire the audiovisual course required for teacher certification. The total number of students involved in the calculations for Phase One ranged from seven hundred and twenty-one (721) to eight hundred and ninety-six (896). This difference of 175 is accounted for by the fact that the student teaching populations were excluded from the comparisons on the laboratory performance test, as explained earlier. Table 12 shows the actual numbers of students used in the analyses in each semester and in each sub-group in Phase One.

TABLE 12. Total Population in Calculations on Various Measures

	SPRING 1960										
	(50 item) Info.		Attitude		(15 item) Picture		Laboratory Written		Lab. P.	Mech. C.	C.A.
PATTERNS OF INSTRUCTION	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Post	Pre	Pre
Separate Course	101	102	101	102	100	102	99	102	102	102	100
Integration Secondary	27	27	27	27	26	27	24	25	27	27	27
Integration Elementary	11	12	11	12	11	12	11	12	12	12	12
Student Teaching Sat. Sec.	15	13	15	13	15	14	14	14	14	14	15
Student Teaching Sat. Elem.	9	9	9	9	9	9	9	9	9	9	9
Student Teaching Non Sat. Sec.*	/	/	/	/	/	/	/	/	/	/	/
Student Teaching Non Sat. Elem.	13	13	13	13	13	13	13	13	13	13	13
Self Study	32	31	32	31	31	32	32	32	32	32	32
TOTAL	208	207	208	207	205	209	202	207	209	209	208

*It was not possible to arrange for a section in this pattern, Spring, 1960.

	FALL 1960										
	(60 item) Info.		Attitude		(30 item) Picture		Laboratory Written		Lab. P.	Mech. C.	C.A.
PATTERNS OF INSTRUCTION	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Post	Pre	Pre
Separate Course	164	166	164	166	164	166	160	166	151		166
Integration Secondary	37	37	37	37	37	38	37	38	38		38
Integration Elementary	23	23	23	23	23	23	22	23	23		23
Student Teaching Sat. Sec.	12	12	12	12	12	12	10	12			12
Student Teaching Sat. Elem.	22	22	22	22	22	22	22	22			22
Student Teaching Non Sat. Sec.	10	10	10	10	10	10	10	10			10
Student Teaching Non Sat. Elem.	16	16	16	16	16	16	16	16			16
Self Study	35	36	35	36	35	36	28	36	34		36
TOTAL	319	323	319	323	319	323	305	323	246		323

Maximum Population in Calculations			Total
Spring 1960	Fall 1960	Spring 1961	
209	323	364	896

Minimum Population in Calculations			Total
Spring 1960	Fall 1960	Spring 1961	
202	305 x246	361 x273	868 721

xLab Performance--Student Teaching Sections omitted.

TABLE 12. (continued)

	SPRING 1961										
	(60 item) Info.		Attitude		Picture		Laboratory Written		Lab. P.	Mech. C.	C.A.
PATTERNS OF INSTRUCTION	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Post	Pre	Pre
Separate Course	165	163	165	163	165	163	165	163	163	165	165
Integration Secondary	38	38	38	38	38	38	38	38	38	38	38
Integration Elementary	23	23	23	23	23	23	23	23	23	23	23
Student Teaching Sat. Sec.	21	21	21	21	21	21	21	21		21	21
Student Teaching Sat. Elem.	24	24	24	24	24	24	24	24		24	24
Student Teaching Non Sat. Sec.	18	17	18	17	18	17	18	17		18	18
Student Teaching Non Sat. Elem.	26	26	26	26	26	26	26	26		26	26
Self Study	49	49	49	49	49	49	49	49	49	49	49
TOTAL	364	361	364	361	364	361	364	361	273	364	364

6.2 General Results

Combining the populations in the various patterns of instruction over the course of three semesters, the general conclusions to be drawn from the data are that there were no significant differences among the patterns in terms of a gross comparison on all measures, although there were areas of superiority for given patterns on given measures. In other words, there was not a proven over all superiority of one pattern over another in producing a significant difference on all measures in the experiment. As Tables 13 and 14 show, there was, however, a rank order obtained by the patterns in terms of the frequency with which a particular pattern produced significant differences on certain of the measures when compared with other patterns on performance on the same measures. Counting the number of instances of significant differences on all post measures in favor of a particular pattern results in the following rank order, with the pattern producing the greatest number of significant differences first in order, with the other patterns following in descending order: Separate Course and Integration Secondary first; Integration Elementary; Self Study; Student Teaching Saturated Elementary; Student Teaching Non Saturated Elementary and Student Teaching Saturated Secondary sharing next place; and Student Teaching Non Saturated Secondary last.

On pre to post gains, the rank order varied slightly as follows: Separate Course; Integration Secondary; Integration Elementary; Self Study; Student Teaching Saturated Elementary; Student Teaching Non Saturated Elementary and Student Teaching Saturated Secondary sharing next place; and Student Teaching Non Saturated Secondary last.

It should be noted that the above discussion of rank order was based upon eighty-four (84) possible comparisons and excluded the Laboratory Performance Test. When the Laboratory Performance results are added to the

TABLE 13. Significant Mean Differences (5% level) in Favor of Pattern When Compared With Other Patterns on Performance on Post Measures. (Combination of 3 semesters: Spring 1960, Fall 1960, Spring 1961)

	Info.	Att.	Pict.	Lab. Written	Lab. Perf.	Total Comparisons
Sep C	6/21*	0/21	13/21	10/21	1/9	29/84** or 30/93***
Int S	11/21	1/21	3/21	14/21	1/9	29/84 or 30/93
Int E	11/21	1/21	2/21	7/21	2/9	21/84 or 23/93
STNS	0/21	0/21	0/21	0/21		0/84
STNE	0/21	0/21	3/21	0/21		3/84
STSS	0/21	0/21	0/21	3/21		3/84
STSE	5/21	0/21	3/21	6/21		14/84
Self S	0/21	0/21	3/21	8/21	4/9	11/84 or 15/93

* 6/21 means 6 out of 21 comparisons favored Sep C
** 84 excludes Laboratory Performance Test
*** 93 includes Laboratory Performance Test

TABLE 14. Significant Mean (5% or better) in Favor of Pattern When Compared With Other Patterns on Pre to Post Gains in Performance on Measures. (Combination of 3 semesters: Spring 1960, Fall 1960, Spring 1961)

	Info.	Att.	Pict.	Lab. Written	Total Comparisons
Sep C	9/21*	0/21	12/21	8/21	29/84
Int S	14/21	0/21	5/21	8/21	27/84
Int E	7/21	0/21	4/21	8/21	19/84
STNS	0/21	0/21	0/21	2/21	2/84
STNE	2/21	0/21	1/21	0/21	3/84
STSS	0/21	0/21	1/21	2/21	3/84
STSE	3/21	0/21	1/21	6/21	10/84
Self S	2/21	0/21	3/21	8/21	13/84

* 9/21 means 9 out of 21 comparisons favored Sep C

data (Table 13) the comparisons on this particular test favored the Self Study pattern, although the total rank order among the three patterns (excluding all Student Teaching patterns) remained the same.

6.3 Specific Results

6.31 Comparison of Total Population by Semester

A comparison of the mean performance level among the total populations by semester on seven measures in terms of mean gain from one semester to the next indicated no significant differences among semesters, except on three out of thirteen possible comparisons. The mean for the Spring Semester, 1961, for the total population on the Laboratory Written Test was significant (1% level) when compared with Fall, 1960. The same significant difference obtained for the Spring Semester, 1961, over the Spring, 1960 on the Picture Test, and over the Fall, 1960 on the Laboratory Performance Test. In summarizing all possible comparisons (Table 15) it appears that population in the Spring Semester, 1961, was not consistently superior on all measures over the other semesters.

6.32 Pre to Post Gains on Course Measures - All Groups

With few exceptions, there were significant gains on the pre to post measures. In fact, in the majority of cases the gains were at the 1% level or better. A study of Table 16 will indicate, however, that no one pattern of instruction was consistent in producing better results than any other pattern. One might conclude, therefore, that all patterns produced learning, generally speaking. In terms of certain kinds of learning, the analysis by pattern will reveal some internal differences in performance on certain measures.

TABLE 15. Comparison of Mean Gains, Semester VS Semester
(t's between groups - total population)

					"t"
			Cumulative Average Gain		
Spring 1960	(N-206)	vs	Fall 1960	(N-323)	.95
Spring 1960	(N-206)	vs	Spring 1961	(N-361)	.53
Fall 1960	(N-323)	vs	Spring 1961	(N-361)	1.73
			Mechanical Comprehension Gain		
Spring 1960	(N-209)	vs	Spring 1961	(N-361)	1.25
			Information Gain (60-item test)		
Fall 1960	(N-319)	vs	Spring 1961	(N-364)	.29
			Attitude Gain		
Spring 1960	(N-205)	vs	Fall 1960	(N-319)	.71
Spring 1960	(N-205)	vs	Spring 1960	(N-364)	.40
Fall 1960	(N-319)	vs	Spring 1961	(N-364)	1.25
			Lab Written Gain		
Spring 1960	(N-162)	vs	Fall 1960	(N-305)	1.34
Spring 1960	(N-162)	vs	Spring 1961	(N-364)	1.69
Fall 1960	(N-305)	vs	Spring 1961	(N-364)	3.56*
			Picture Gain		
Spring 1960	(N-203)	vs	Spring 1961	(N-264)	5.03*
			Laboratory Performance Gain		
Fall 1960	(N-246)	vs	Spring 1961	(N-364)	5.49*

* Significant at 0.1% in favor of Spring 1961

6.33 Analysis of Results by Patterns of Instruction

6.331 Separate Course:

The Separate Course pattern showed few significant differences in Information gains when compared to the Integrated patterns, but was consistently higher than Self Study and to an even greater extent higher than the Student Teaching patterns.

No significant differences were found in Attitude gains, nor was there any apparent pattern of consistency.

TABLE 16. Pre to Post Within-Group Mean Gains on Course Measures

	Information+			Attitude			Picture Test			Laboratory Written+		
	S60^x	F60	S61	S60^x	F60	S61	S60^x	F60	S61	S60^x	F60	S61
Sep C	15.78	22.1	24.5	1.80	5.20s	6.69s	18.61+	2.62s	24.88+	31.47	37.87	46.17
Int S	9.71	14.2	10.6	3.33+	2.06s	3.28s	7.34+	10.16s	12.60+	14.01	15.25	20.38
Int E	9.71	8.27s	9.94	3.33+	4.25s	3.78s	7.34	8.14s	9.52+	14.01	15.41	16.83
STNS	5.01	5.83	7.96	1.97	1.27	1.56	2.74s	2.11	4.70+	12.13	10.00	10.13
STNE	5.01	5.61	8.08	1.97	2.02	2.53s	2.74s	6.26s	7.32+	12.13	8.36	11.11
STSS	5.29	2.56	5.77	1.93	2.82s	2.34s	4.57+	2.57s	6.46+	13.80	8.49	12.14
STSE	5.29	11.9	6.21	1.93	1.80	2.29s	4.57+	6.53s	7.74+	13.80	12.87	14.40
Self S	5.27	7.68	8.04	2.87+	2.52s	3.64s	4.72+	10.00s	9.93+	19.78	13.92	23.46
Total N	205	319	364	205	319	364	205	319	364	205	319	364

x Data combined S60 for Int S and Int E; STNS and STNE; STSS and STSE.

+ Gains significant at 1% level, including all comparisons in Information (except S) and in Lab Written categories.

s Gains significant at 5% level.

In the Picture Test gains, the Separate Course pattern was significantly higher than the Student Teaching groups with some consistency, and generally higher than the other on-campus groups.

In gains on the Laboratory Written test, the Separate Course pattern was significantly higher, and consistently so, than the Student Teaching patterns, and slightly higher, although not significantly, than the other on-campus patterns.

In the Laboratory Performance measure, the Separate Course pattern was generally about the same as the other on-campus groups, including the Self Study pattern. In Laboratory Performance, the Self Study group was consistently higher, but not significantly so.

6.332 Integration:

Integration Secondary and Elementary generally performed on a par with the Separate Course pattern on all measures. Integration Secondary was more consistent in this than Integration Elementary. The Integration Elementary pattern showed some variations, being significantly higher than the other on-campus groups in some areas and significantly lower in others.

Integration Secondary was consistently high in Information gains, with a slight tendency to be less homogeneous. These differences were not generally significant.

No significant differences in Attitude gains appeared, but Integration Secondary again showed a slight tendency to be less homogeneous.

In Picture Test gains the Integration groups were consistently lower than the Separate Course group, with about half of the differences being great enough to be significant in favor of the Separate Course groups. In addition, the Integration groups were generally higher and more homogeneous in Picture gains than the Student Teaching groups.

In gains on the Laboratory Written measure, the Integration pattern did about equally well as the Separate Course pattern, as might be expected since the students in Integration had the same laboratory experiences as the students in the Separate Course pattern. This same comment applies to the results of the Laboratory Performance test. However, it should be noted that the Self Study group was consistently higher in Laboratory Performance than the Integration and Separate Course patterns.

In the judgment of the author, an important point should be made about the performance of the Integration groups at a level approaching the performance of the Separate Course pattern. As conducted in the study, the Integration patterns were organized and staffed in such a way that Integration meant a form of team teaching. In the case of Integration Elementary, as pointed out earlier in this report, the instructor for the audiovisual portion of the methods courses met with the classes in methods at the same time that the instructor from the Elementary Education Department met with the students. In this way the two instructors complemented each other in the classroom and contributed as the occasion warranted. Because Integration Elementary required the instructor from the experiment to meet with several instructors from the Elementary Education Department, it was not always possible for the instructor representing the audiovisual portion to attend all sessions.

The situation with Integration Secondary was somewhat different from that described for the Elementary pattern since the Secondary students met in one general methods course and not in several sections devoted individually to methods in the subject areas. This arrangement allowed a truer exercise of the team approach to teaching. In the last two semesters of the Integration Secondary pattern, the author and a professor from the Secondary Education Department met together with the class in the experiment as a team. For every class session, with few exceptions, both instructors were present and conducted the class for maximum integration of the general methods and the audiovisual content.

6.333 Self Study:

The Self Study groups appeared consistently lower than the other campus groups on Information gains, and these differences were generally significant. Also, the Self Study groups showed spot differences with the Student Teaching groups, a few significant, and generally in favor of Self Study. The Self Study group appeared to be slightly less homogeneous than the other groups.

No significant differences appeared on Attitude gains in comparison with any of the other groups.

Picture Test gains showed no consistent pattern of significant differences or homogeneity.

On the Laboratory Written test the Self Study pattern showed consistently smaller gains than the other on-campus groups, and consistently higher than the Student Teaching groups. Most of the differences were not statistically significant.

On the Laboratory Performance measure the Self Study group was consistently higher than the other on-campus groups, although not significantly so. The Self Study group did appear generally more homogeneous than the other on-campus groups on this measure.

As a general estimate, the Self Study group seemed to do nearly as well as the other on-campus groups, with the exception of the Information Test. In general the Self Study groups did better than the Student Teaching groups.

6.334 Student Teaching:

In general, the Student Teaching patterns did not do as well as the on-campus groups in any of the measures. Certain spot variations are seen, but no consistent pattern appears in favor of the Student Teaching groups.

Among the Student Teaching groups certain consistencies are to be seen. As might be expected, the Saturated groups did generally better than the Non-Saturated groups in the Laboratory Written gains. The Non Saturated Elementary groups were consistently higher than the other Student Teaching groups in Attitude gain, although at the same time less homogeneous. No consistent pattern is apparent in the results of the Information and Picture tests among the Student Teaching patterns.

The Laboratory Performance data on the Student Teaching patterns is not included because the methods of examination were not comparable to the on-campus patterns for administrative and logistic reasons.

6.4 General Evaluation of Four Patterns of Instruction

The specific results of Phase One indicate that there were no significant differences among patterns in terms of any one pattern claiming overall superiority in preparing students to perform on the measures in the study. As was discussed in previous sections of this report, each pattern --with the possible exception of Student Teaching--seemed to produce scattered superiority on specific measures, but these evidences of superiority were not generally consistent except for Information gain in the Separate Course and Integration, and Laboratory Performance for the Self Study group. In order of performance on all measures, it will be remembered that the sequence of superiority were the Separate Course, Integration, Self Study, and Student Teaching last.

It is the opinion of the author that there is more to be learned in a research project of the magnitude described here than is evident from the statistical analyses. There are insights to be gained from the observations of the staff of the experiment and from the students themselves as they have reacted to various aspects of the course. While it is true that the observations that follow can be nothing more than subjective judgments, it is felt that they may be useful in determining the relative merits of the objective evidence herewith presented and for possible directions in the future.

6.41 Potentials of Self Instruction

In assessing the relative merits of the various patterns for presenting audiovisual information and developing skills and favorable attitudes, there are judgments which could be made which favor one pattern or another, depending upon the aspect of the course in question. In terms of presenting pre-service teachers with maximum amounts of information concerning the place of audiovisual materials in the process of teaching and learning, it appears that that pattern which allowed the greatest control of course structure and which provided student access to the instructor had the greatest potential for acquiring information. This was borne out by the results of the Separate Course and Integration patterns. On the other hand, there are some who would argue that certain types of information which lend themselves to presentation in programmed and reading forms. should be presented in this way. Perhaps this is true. It certainly can be argued and perhaps not refuted at this stage of course development in the audiovisual area, that types of materials which can present information in a self study context, whether programmed or textual, can be learned by college and university students in lieu of the traditional lecture approach to instruction. This was proved in part by the Self Study pattern.

While the Self Study pattern did not produce the levels of performance on the Information Test comparable to the Separate Course and Integration where the students had access to instructor-directed instruction, it cannot be said categorically that the Self Study students could not have approached higher levels in Information acquisition if they had had access to as sophisticated materials for this purpose as was provided for teaching perceptual-motor skills. It was the belief of the staff associated with the Self Study pattern that given proper support to construct and acquire self instructional materials, much better performance may be achieved in information acquisition through self study.

Certainly part of this discussion hinges upon the meaning of information acquisition. If it means acquiring information of a factual nature, then sheer logic and the experiences of programmed instruction would support the potentials of a self instructional program as meeting these requirements.

If information acquisition also includes a conceptualization of the interrelationships of audiovisual type materials with the teaching-learning process, then self instructional materials may have limited application. There were times when students in the Self Study pattern expressed a wish to discuss with an instructor the problems associated with the selection and utilization of audiovisual materials. It is the judgment of the author, who was directly responsible for teaching the Integration Secondary pattern, that the favorable showing of this pattern on the course measures was due in large measure to the team approach which was used and the opportunity for the students to discuss pertinent problems with the instructor.

Perhaps, then, the answer to the use of self instructional approaches to information acquisition and conceptualization lies in some combination of the self instructional approach for certain types of information with seminars for the discussion of audiovisual applications to the learning process.

In terms of the teaching of perceptual-motor skills, there is sufficient evidence that this type of learning in any audiovisual course may be acquired through appropriately designed and sophisticated self instructional materials, such as film loops, charts, drawings, recorded instructions and the like. It appears to be true also that this approach to the teaching of perceptual-motor skills, produced the concomitant benefit of developing positive attitudes among the students. The experience of the study has shown that students not only learned skills at a high level, but that this approach had high motivational value. There were expressions on the part of some of the students in the Self Study pattern that "more courses ought to be organized in this fashion". Since the students were allowed to come and go as they wished, according to their own scheduling, the Self Study pattern became an experience in self-discipline and self-reliance. Perhaps these attributes were partially forced by the requirements of self instruction which permitted no assistance in projecting the motion pictures, filmstrips and the like which contained "content" to be learned. On the other hand, there are anecdotes which could be recounted of student elation and intrinsic motivation arising out of having learned a relatively complex operational task through the student's own perse verance in the discovery process. It is felt that this success had a direct bearing on the positive remarks some students made regarding the importance of audiovisual media in the learning process.

6.42 Economic Considerations

Another factor which needs some comment and one which is not evident in the statistical analysis, concerns the economic factors associated with self-instruction and team teaching in Integration. In the latter case, particularly in Integration Secondary, two professors shared the responsibilities for one class and both attended class sessions jointly. Some question thus may be raised about the ratio of professor-student costs. Depending upon one professor, however, to provide the content of two courses has not generally proved successful in the history of the integration of audiovisual courses with methods. Perhaps the answer lies in the careful designing of the total professional sequence for pre-service teachers so that the bits and pieces of separate courses may be rearranged to avoid duplication where it seems unnecessary and where the responsibilities of separate courses are redefined into a unified and cohesive totality of pre-service experiences. In this context, the integration of the audiovisual content into the professional sequence without a separate course may be possible. It is the judgment of the author, however, that such an integration pattern would require much more planning and faculty cooperation than seems to be the tradition at present.

The economic factor associated with the Self Study pattern has been analyzed by the instructor responsible for that pattern as follows: "... the student load serviced by the instructor, with varying degrees of support by one graduate assistant, was equivalent to 4.6 sections of practicuum (at 12 students per lab period) and 3.6 lecture-discussion sections (at 30 students per section); a total of nine classroom periods per week.

"Another economic factor is space utilization, and here self-instruction was more costly than traditional instruction. In the semester of maximum enrollment, 55 students were scheduled into the room for three periods each week (five hours were reserved for making changes in presentations): 55x3 = 165 student-hours. In the traditional instruction patterns the space could have accommodated 12x18 = 168 + 30x26 = 780, or a total of 948 student-hours. These latter figures assume student occupancy every hour of the week. Full-time use of the room under self-instruction would have permitted 200 student hours. This relative inefficiency could have been reduced by more flexible space arrangement, by greater efficiency in instruction... or by making available auxiliary space for use of certain periods in the course when greater space is necessary.

"...Individuals' time in the self-instruction room varied widely from session to session--from 15 minutes to 135 minutes--but the mean was 38 minutes. This suggests that the course could have been reduced by 34%, even at its current level of efficiency, thereby making possible (by redesigning the schedule) an increase in student-hours of at least 30%."

While this analysis suggests a lack of efficient utilization of the facilities provided for Self Study, it also suggests something of greater importance for the self-instructional technique. If materials are carefully designed and the space requirements are assiduously planned, a self-instructional space may be able to handle more students than traditional methods, particularly if flexible scheduling for maximum use of the facility is provided.

6.43 Student Teaching--Potentials and Problems:

One of the major arguments for combining the experience in selecting and using audiovisual materials with the practical considerations of the classroom, whether in a methods course or in student teaching, is that these contexts more nearly approximate the actual teaching situation than is possible in a separate audiovisual course. Theoretically, this point of view has great potential. Practically and logistically it may present some insurmountable problems.

One of the principal criticisms of the students involved in the

Student Teaching patterns was that the consideration of audiovisual materials in teaching was an addendum to the regular requirements of the student teaching program. This was true in terms of the class sessions which were held after school hours, either immediately after the close of school or in the evening. This was not true for certain of the activities during the day when the audiovisual instructor visited with the student teachers in their respective teaching rooms for purposes of assisting them in their use of media in teaching.

It was the consensus of the instructors associated with the Student Teaching pattern that the "superimposed" nature of the audiovisual instruction on location tended to make the student teachers considerably negative about the experience, even though the arrangement permitted the earning of University credit for the audiovisual course in the field. One instructor also indicated that some cooperating teachers were not favorably disposed to audiovisual instruction and, therefore, tended to hamper the experience of student teachers.

Theoretically, at least, it is difficult to refute the position that the study of the selection and utilization of audiovisual media in the context of actual teaching would generate the most positive effects one might expect. In the case of this project, however, this was not the case. On the other hand, this is not saying that the theoretical optimum may not be realized with proper care and cooperation in designing the student teaching experience to provide for a study and use of audiovisual materials. One might expect, for example, that the student teaching experience would be considerably enhanced if such an arrangement were possible. Another advantage would be that the student's conceptualization of the place of media in the learning process would develop into one which considers media as essential, rather than one which regards media as incidental.

From the experience of the instructors in this pattern, it is the consensus that the maximum potentials of the study of media in the context of student teaching may be realized only if the following steps are taken. First, it is essential that those planning the student teaching experience act in concert with the audiovisual instructor in designing a student teaching "package" which incorporates and integrates relevant experiences in optimum form and frequency. Second, student teachers should have a minimum of skill in operating pertinent equipment before arriving at the student teaching experience. Third, the school system and the responsible college or university should provide adequate supplies of media and equipment to give the student teacher a breadth of experience under a variety of conditions. Fourth, if there are to be consultants available to the student teachers from the media field, the media person should be given ample time to visit the various classrooms and to hold seminars with the students and their cooperating teachers as a group.

II. PHASE TWO - FOLLOW-UP STUDY OF TEACHER PERFORMANCE IN PENNSYLVANIA PUBLIC SCHOOLS

1. INTRODUCTION:

The major purpose of Phase Two was to observe and record the effects of the various patterns of instruction used in Phase One upon the performance of the participants in the experiment once they became full-fledged teachers in the schools of Pennsylvania. This section will describe the details associated with the follow-up activities and the results of the analyses made of the data collected in this process.

2. DURATION AND COVERAGE OF FOLLOW-UP:

It will be remembered that Phase One of this study covered two academic years, 1959-60 and 1960-61. Phase Two involved the two academic years, 1961-62 and 1962-63, and was carried on in the various public schools of Pennsylvania where the participants in the experiment had acquired teaching positions.

A total of one hundred ninety-six (196) elementary and secondary schools were visited during the two years of follow-up. A total of 235 people were included in the final data analysis. The 235 people represented slightly more than 24 percent of the 896 people included in the calculations of Phase One. Considering the fact that the attrition rate among graduates from the teacher education curriculums at The Pennsylvania State University who do not teach in Pennsylvania is about fifty percent (50%), the number 235 represents slightly more than the fifty percent one might expect to be available in Pennsylvania for the follow-up study. It should be noted, too, that one of the restrictions of the study was that only teachers in Pennsylvania would be visited.

A perusal of the map in the Appendix will show that the greatest concentration of schools visited were in the regions surrounding Pittsburgh and Philadelphia, with the greatest number of locations forming an inverted crescent across the middle of the state from East to West. Almost all regions of Pennsylvania were visited at one time or another.

3. PROCEDURE FOR LOCATING STUDENTS AND ARRANGING INTERVIEWS:

A card file was compiled listing every student who had participated in the four patterns of the project. This card file contained the student's name and home address (obtained from the University Student Directories), the semester enrolled in the audiovisual course, and the graduation date, which was obtained from the Commencement Programs.

A letter was mailed to all persons upon their graduation, reminding them that they had been members of the experimental sections of the basic audiovisual course and requesting information relative to their present teaching positions, i.e. name and address of school, subjects being taught, grade level, name of administrator. It was requested that this information be returned on the stamped addressed postcard enclosed with the letter. They were also advised that members of the staff would visit them in their classrooms to obtain their reactions to the pattern by which they had been taught and to evaluate the effects of the patterns of instruction.

Letters were sent to a total of 1190 students who had been involved in the project. Mailings were sent in November 1961, May 1962, September 1962, and January 1963. Replies were received from 777. Among these were replies from 202 project participants who were teaching outside the State of Pennsylvania. Another three hundred and four (304) were not available for visits because a few of them were substitute teachers, some were speech correctionists, and the remainder were not teaching because of military service, marriage, employment outside of education, and graduate study.

On receipt of the postcards, information was transferred to file cards.

Each teacher was given a number for identification purposes. Two maps of the State were set up and on one was placed numbered pins indicating students to be visited and their locations. Later in the follow-up, map pins were placed on the second map representing people visited. The State was divided into twenty-one (21) sections, thereby expediting the planning of itineraries.

Prior to the visits, letters were sent to administrators explaining the project and requesting permission to visit the teachers. The administrators were requested not to advise the teachers of the visitation date in order that the classroom situation might be as normal as possible when the visit occurred. Since part of the visit required an interview with the teacher, a request was made of the administrator to provide space and time for the interview, if at all feasible. In every situation, the administrators cooperated to the fullest extent in expediting the visits.

Included with the letter to the administrator was a slip of paper identifying the teacher to be visited and the week during which the visit was to be made. To allow for contingencies associated with traveling from school to school, interviews were not scheduled for an exact hour or day. To minimize the correspondence load of the administrator, a reply to the letter was not requested unless the administrator needed to inform the project director of conflicts in dates, or preferred that the teacher not be visited. There were no replies in the latter category.

It is estimated that an average of 226 interviews were included in the final calculations, even though a few more visits were made. A number of interview schedules were eliminated from the final calculations for those teachers who traveled from building to building throughout the system as special teachers in music, in speech therapy and the like.

4. VISITATION PROCEDURES:

Once permission had been assured and the itinerary set up, members of the project staff proceeded with the visitations according to a standardized format. This format involved a prescribed sequence during the visit and the use of specially prepared interview schedules.

Before any teacher was visited in a school, the interviewer visited with the chief administrator to obtain certain kinds of information about the school system and about local policy pertinent to the use of audiovisual materials and equipment. These interview schedules will be explained in a subsequent section of this report.

After the interview with the administrator or administrators, the interviewer visited the teacher in the classroom where that teacher happened to be at the time of the visit. On occasion, some teachers were visited in a classroom assigned to them for all or most of their classes. On other occasions, the teacher was a "floater" and had to be visited in any of several rooms. This situation was particularly true of those in the secondary schools.

If the teacher happened to have a free moment at the time that the interviewer appeared for the visit, the interviewer and the teacher sat down together to fill out the appropriate interview schedules. More often than not, the interviewer met with the teacher after the observation in the classroom, sometimes at the end of the period or at the end of the school day.

In addition to having the teacher react to several interview schedules (which will be described subsequently), the interviewer himself filled in several forms. One involved the recording of data about the classroom itself, and the materials and equipment it contained. The purpose of this schedule was to establish some estimate of the availability and convenience in using audiovisual materials in that classroom.

Another form that the interviewer completed while in the classroom was a checklist on which was recorded the use of various audiovisual materials by the teacher, with some opportunity for the interviewer to evaluate the quality of use.

4.1 Variability Among Interviewers

The magnitude of the follow-up activity required that more than one person be involved in visiting schools. Three professors were assigned responsibilities in this area. They were Dr. G. M. Torkelson, project director; Dr. C. O. Bergeson, Associate Professor of Education and associate-director of the project; and Dr. H. D. Sherk, Assistant Professor of Education. The maximum number of visits by each, as included in the final calculations was, in descending order of frequency; Bergeson, 132; Torkelson, 71; Sherk, 32.

In any study which uses different interviewers, there is always a question of the interviewers obtaining comparable information and in making comparable judgments where questions of subjectivity arise. Since the three interviewers worked closely together and had a mutual understanding of the purposes of the interviews and the format involved, it may be assumed that in areas of information gathering there was comparability among the interviewers. This would appear to be true for all those instruments which required the recording of data gathered from school officials. Where each interviewer had to make estimates of the materials in the classroom, however, such as the size of room, the linear feet of chalkboard, the amount of storage and display space, and the like, there was admittedly an element of subjective judgment.

To get at this problem, an analysis was made of the interview schedules completed by each interviewer, particularly where the form required independent judgment. The instruments most likely to be suspect were the School Description, the Classroom Description, and the Class Visitation. The latter required the interviewer to check the use of equipment and materials in the classroom during the visit, and some quality judgment about use. By the very nature of the instruments, one would expect the greatest opportunity for variability among the interviewers on the Class Visitation and the Classroom Description. Tables 17 and 18, in fact, indicate this to be true.

From Table 17 it is apparent that the interviewer did make a difference in the Class Visitation score. In fact, the difference is significant at the .001 probability level, with Bergeson assigning the highest scores, Torkelson next, and Sherk the least.

TABLE 17. Relationship Between Interviewer and Class Visitation and Frequency of Use Scores

Interviewer	Class Visitation Score		Frequency of Use Score	
	X	n	X	n
Torkelson	194	68	157	69
Bergeson	245	130	165	131
Sherk	189	31	171	32
F-Value	25.76***		.69ns	

ns Not significant

*** Significant at .001 probability level.

The Frequency of Use Score in Table 17 indicated no difference among interviewers. This is understandable because the Frequency of Use instrument required the teacher to fill out the form. This instrument asked for a check of the frequency of use of certain materials by the teacher in the classroom.

Table 18 includes the analysis on the School and Classroom Description instruments. There was a significant difference among the interviewers on the Classroom Description at the .05 probability level. Torkelson assigned the highest score, Bergeson next, and Sherk last. Sherk was consistent in being the most conservative on both the Class Visitation and Classroom Description. Torkelson and Bergeson reversed positions on the two instruments, with Torkelson perhaps assigning more credit or recording more details of the classroom than Bergeson. Conversely, Bergeson made higher value judgments about the use of materials in the classroom than did Torkelson.

It is interesting to note on Table 18 that there were no significant differences among interviewers on the School Description scores. This substantiates the idea that, in fact, the School Description was not the type of instrument which required more than an accounting of facts about the school itself.

TABLE 18. Relationship Between Interviewer and School and Classroom Description Scores

Interviewer	School Description Score		Classroom Description Score	
	$\bar{X}$	n	$\bar{X}$	n
Torkelson	253	69	278	67
Bergeson	259	131	245	128
Sherk	271	32	230	31
F-Value	.34 ns		3.98*	

ns Not significant

* Significant at .05 probability level.

Table 19 makes a comparison between the interviewer and the scores on the Course Effectiveness Inventory and the Total Opinionnaire Scores. Here is another case where the instruments were answered by the teachers themselves and could not be influenced by the judgments of the interviewers. This is borne out by the lack of significant differences among the interviewers.

TABLE 19. Relationship Between Interviewer and Course Effectiveness and Total Opinionnaire Scores

Interviewer	Course Effectiveness Score		Total Opinionnaire Score	
	$\bar{X}$	n	$\bar{X}$	n
Torkelson	342	70	386	71
Bergeson	345	131	382	130
Shark	348	32	382	32
F-Value	.04 ns		.08 ns	

ns Not significant

The significant differences among the interviewers in the areas where they were required to make subjective judgments suggests that the analyses involving the instruments where the differences occurred might not be accepted as valid measures of the absolute effectiveness of the use of audiovisual materials and equipment. In this connection, some further comments are necessary.

In the case of the Classroom Description where the difference was at the .05 level of probability, it should be underscored that this instrument was primarily an accounting of what was physically present in the classroom at the time of the interviewer's visit. As a study of the instrument in the Appendix will reveal, the major areas for variability of judgment are in items 9, 10, 11, and 12 which required the interviewer to estimate the number of linear feet for certain items, and the total square footage for other items. The rest of the instrument was a recording of facts readily obtainable by simple observation and counting by the interviewer, and by asking the teacher to supply the information required by items 7 and 8. Any variability in score among the interviewers, therefore, would be primarily in the area of estimating the space available in the classroom for display and storage. The factoring out of the items in the instrument which might be more nearly attributable to an interviewer's judgment was not undertaken, but might be a possible approach to judging more accurately the particular bias or margin of error-in-estimation related to a particular interviewer.

It appears that the bulk of the information in the Classroom Description can be removed from interviewer judgment because it requires a counting type of procedure. As later information in this report will show, useful information was obtained from the Classroom Description in those areas where counting was the major method of recording.

On the Class Visitation instrument, it is true that the interviewer in checking the use of certain materials and equipment was required to make a judgment about use on the scale: poor, fair, good, excellent, not used. As a general rule, however, there were always more checks in the not used column than in any other. Details on this point will be provided later in this report.

Because of the significant difference, at the .001 level of probability, among the interviewers on the Classroom Visitation score, it is not possible to use this score as an absolute measure of the effectiveness of use of audiovisual materials and equipment in the classroom. Conversely, from the fact that the not used category was checked most frequently, it appears that there is a dichotomy available for judgment apart from the subjective evaluation of the effectiveness of use involved. This dichotomy is between those items used - without a value judgment - and those items not used. If the not used category was checked most frequently, it simply means that during the time of the visit those items, in fact, were not being used. This dichotomy, then, does give an estimate of what was in fact being used in the classroom apart from the evaluative judgment of the interviewer and minimizes to an extent the variations among interviewers.

4.2 Improvement of Interview Schedules

After about seventy interviews, at the termination of the Spring, 1962, the interview schedules were examined for possible improvement, particularly in terms of the format for scoring purposes and for inclusiveness of content. Changes were made in the School Description, Classroom Description, the Course Opinionnaire, and the Class Visitation schedules.

The School Description change was primarily organizational to permit easy scoring. The only additions occurred in adding a number of items to the materials and equipment check lists, in line with the additions written-in during interviews using the original forms.

The Classroom Description schedule was also changed in keeping with organization for scoring and the addition of certain items of equipment and materials which were written-in on the original forms.

The original Course Opinionnaire consisted of thirty-seven word opposites, with a seven point scale between the poles. This was a semantic differential to assess the subjective reactions of the teachers to the pattern through which they were taught the audiovisual course. The original required a response to the course as a total experience. The change in the Opinionnaire consisted of adding a duplicate set of word dichotomies for testing reactions to the laboratory - or equipment operation - portions of the course. The changes thus provided two semantic differentials, one testing reactions to the lecture-discussion portion, and the other testing reactions to the laboratory.

The Class Visitation Check List was reorganized slightly to permit easier scoring and to add several items which had been written-in through experience with the earlier form.

The basic question that one would ask about a change in interview schedule format would be the extent of bias contributed by the changes. To determine the extent of bias, the two sets of questionnaires were separated into the originals and the revised forms. In the computer analysis which followed, the original set was numbered beginning with 500 and the revised versions numbered beginning with 1. Thus, reference will be made to the "500" as the original and the "100" as the revised versions.

Since the most extensive change was in the addition of an identical semantic differential to permit a differentiation of attitude toward the laboratory and lecture portions of the audiovisual course, it is important to examine this addition first. As Tables 20, 21, 22, and 23 show, there were no significant differences between the Laboratory Opinionnaire and the Lecture Opinionnaire in biasing the results of a comparison of these opinionnaires with the elementary-secondary factor, the semester during which the teacher had been enrolled in the course, with sex, and with the pattern of instruction.

TABLE 20. Relationship Between the Elementary-Secondary Factor and Lab and Lecture Opinionnaire Scores

Elementary or Secondary	Lab Opinionnaire		Lecture Opinionnaire	
	$\bar{X}$	n	$\bar{X}$	n
Elementary	407	88	350	88
Secondary	407	64	375	64
F-Value	0.00 ns		2.56 ns	

TABLE 21. Relationship Between Semester Enrolled in the Audiovisual Course and Lab and Lecture Opinionnaire Scores

Semester Enrolled	Lab Opinionnaire		Lecture Opinionnaire	
	X	n	X	n
Fall 1959	388	20	324	20
Spring 1960	429	14	344	14
Fall 1960	412	47	372	47
Spring 1961	405	72	368	72
F-Value	.60 ns		1.59 ns	

TABLE 22. Relationship Between Sex and Lab and Lecture Opinionnaire Scores

Sex	Lab Opinionnaire		Lecture Opinionnaire	
	X	n	X	n
Male	416	45	379	45
Female	403	108	354	108
F-Value	.66 ns		2.27 ns	

TABLE 23. Relationship Between Pattern of Instruction and Lab and Lecture Opinionnaire Scores

Pattern of Instruction	Lab Opinionnaire		Lecture Opinionnaire	
	X	n	X	n
Self Study	441	20	378	20
Separate Course	413	71	369	71
Integrated	411	25	350	25
Student Teaching Saturated	388	24	341	24
Student Teaching Unsat.	348	13	350	13
F-Value	2.55 ns		.71 ns	

ns Not significant

Since there were no differences contributed by creating a separate laboratory and lecture opinionnaire, the two questionnaire scores were combined for simplification in analysis. Thus, in the subsequent analyses the opinionnaire score will appear as the "total" opinionnaire score.

After the differences contributed by separate opinionnaires had been determined, and the scores subsequently combined, the next analysis required the separation of the "100" and "500" series for determining the extent of bias caused by all of the format changes. Tables 24, 25, and 26 summarize this analysis.

TABLE 24. Relationship Between Questionnaire Format (100 and 500 series) and Class Visitation and Frequency of Use Scores

100-500 Series	Class Visitation Score		Frequency of Use Score	
	X	n	X	n
100's	220	159	169	159
500's	227	70	160	73
F-Value	.58 ns		3.39 ns	

ns Not significant

TABLE 25. Relationship Between Questionnaire Format (100 and 500 series) and Course Effectiveness and Total Opinionnaire Scores

100-500 Series	Course Effectiveness Score		Total Opinionnaire Score	
	X	n	X	n
100's	348	160	383	160
500's	334	73	383	73
F-Value	.91 ns		.00 ns	

ns Not significant

TABLE 26. Relationship Between Questionnaire Format (100 and 500 series) and School and Classroom Description Scores

100-500 Series	School Description Score X	School Description Score n	Classroom Description Score X	Classroom Description Score n
100's	267	162	245	160
500's	238	70	273	66
F-Value	4.14*		4.37*	

* Significant at .05 probability level.

Tables 24 and 25 indicate no significant differences when the "100" and "500" formats are compared with the Class Visitation, Frequency of Use, Course Effectiveness, and Total Opinionnaire scores. Table 26, on the other hand, leads to the conclusion that the questionnaire format did, indeed, have significant effects upon the scores obtained from the School Description and Classroom Description schedules. Interestingly, the revised format increased the School Description score at the .05 level of significance and lowered the Classroom Description score at the .05 level of significance.

The reasons for the influence of the format are difficult to determine. As was indicated in the discussion of the format changes for the School and Classroom Description schedules, the changes were primarily in the category of slight rearrangements for purposes of scoring. One would expect that if the format did increase the potentials for higher scores then both of the schedules in question would have resulted in higher scores.

Another theory might be that the School Description revision increased the accuracy of gathering information from school authorities and hence would tend to increase the scores. Conversely, the revision of the format for the Classroom Description may have reduced the ambiguity of the earlier instrument and consequently narrowed the range of independent judgments required of the interviewers in documenting the facts about the classroom. If this, in fact, were the case, the change in scores would be explained.

Lest one become too concerned about the differences which resulted from the format change, it should be pointed out that both the School and Classroom Description instruments were designed for recording facts about school system and hence were documenting the facts of availability of audiovisual materials rather than recording the actual use of these items by the teacher. The other instruments developed for the follow-up, therefore, may be assumed to be much more important for judging the effects of the experimental instruction upon teaching performance than the School and Classroom Description scores. As previous tables have shown, the instruments to which the teachers responded, namely, Course Effectiveness, Total Opinionnaire, and Frequency of Use, were not affected by the format changes.

5. DESCRIPTION OF INTERVIEW SCHEDULES AND ANALYSIS TECHNIQUES:

It is the purpose of this section of the report to describe the various instruments developed for the interview or follow-up activities and the methods by which the data were analyzed.

It will be recalled that the major reason for the follow-up phase of this project was to assess the effectiveness of the pre-service preparation of teacher trainees to select and utilize audiovisual materials and equipment in their subsequent teaching positions. This meant that the teachers were visited not only for purposes of assessing their performance, but also for judging the availability of audiovisual materials and equipment in the schools in which they taught. The assumption for gathering this latter information was that the supply of audiovisual materials and equipment would be presumed to have an effect upon the teacher's opportunity to perform and could act as a deterrent or a support to the pre-service preparation each teacher had received.

The instruments developed to judge the effectiveness of the undergraduate preparation provided for various kinds of information and teacher reaction. Briefly, the teacher responded to an open-ended interview schedule asking for memory of the audiovisual course content; a semantic differential instrument asking value judgments about the course; a check list for evaluating the usefulness of the course content in relation to teaching responsibilities; and a frequency-of-use inventory whereby the teacher checked items used in teaching.

The interviewer filled in forms calling for a school description and the availability of audiovisual materials and equipment; a classroom description relevant to the use of audiovisual materials and equipment; and a checklist recording the actual use of materials during the time the interviewer was in the classroom observing the teacher and class.

In terms of the analysis of follow-up data, there were four independent variables which were compared with the various instruments used in the interviews. These independent variables were the pattern of instruction by which the audiovisual course had been taught, the elementary-secondary curriculum factor as affecting teacher performance, the semester during which the teacher had taken the audiovisual course, and sex as related to use of audiovisual materials and equipment. All of these variables were analyzed in terms of their effects upon the scores of the instruments previously mentioned and will be discussed in a subsequent section of this report.

5.1 School Description

In the sequence of the visit by the interviewer, the first document to be filled-in was the School Description inventory, with information obtained from the school superintendent, supervising principal, or a subordinate. It should be noted that in general, the School Description applied to the school in which the teacher to be visited was teaching, and not generally to the entire school system. In some cases, certain questions required information about the whole system in order to arrive at a per teacher or per pupil budget item.

Aside from information identifying the school system, its location, its chief administrator, and so forth, the School Description requested information about the building a-v coordinator, the system a-v coordinator, budget for materials other than books and pamphlets, the number of rooms that could be darkened, and the production facilities for audiovisual materials. An inventory was made also of the equipment and materials available to teachers generally. This was not simply a naming of items, but a counting of the items to arrive at some sort of availability index. Information was requested also about field-trip policy and the in-service training of teachers in the use of audiovisual materials and equipment.

To arrive at a score which could represent comparative positions of schools in terms of the availability of audiovisual materials, and equipment and facilities to complement their use, there was an arbitrary assignment of values to items in the School Description inventory. Anyone conversant with the audiovisual field may likely arrive at a different weighting system than that finally developed because of differing perceptions of the relative contributions of certain items to teacher use of audiovisual materials and equipment. In the final analysis, however, the value of the system was to provide some arbitrary comparative basis for judging the school facilities as a factor in supporting or denying the use of given materials and equipment in teaching.

A study of the School Description in the Appendix will indicate the number of points assigned to each of the items. Certain of the items were merely of an informational sort. These were not considered pertinent in developing a measure of availability of materials and equipment and were not included in the scoring. It will be noted that the greatest values were assigned to the items on budget, equipment, and materials available to the teachers. Without money and supplies, the teacher is virtually left to her own devices in providing a variety of learning experiences in her classroom. This means a major dependence upon the traditional, relatively inexpensive meterials that one may find in most classrooms, e.g. chalkboards, bulletin boards, charts, maps and so forth.

Because of the variability in amount one would naturally expect in the items concerning budget, materials, and equipment, a scoring formula was developed as a measure against a presumed ideal score for each.

Item number six (6) on the School Description instrument concerned the budget for instructional materials other than the printed materials normally thought of as books, library materials etc. Assuming that a normal pupil/teacher ratio is 25/1, and assuming an ideal maximum expenditure per pupil for materials of $10, it was determined that the ideal standard would be $250 per teacher. On this basis, the maximum score for item six would be 250 points. The formula required is as follows:

$$\frac{\text{Budget amount}}{\text{No. of teachers x \$250}} = \text{percent of 250 points}$$

For example, if the budget amount equalled $250 per teacher, the percentage would figure out to be 100% of 250 points, or a score on that item of 250. In actual use, no school attained a score of 250.

Item number ten (10) in the School Description required an accounting of the number of pieces of equipment in each category that the teacher had available. In some cases, it was indicated that certain pieces of equipment were not available in the particular building in which the interviewee taught, but that those items could be obtained upon request. If this was the arrangement, that item was counted as being available to the teacher.

As in the case of item number six, an arbitrary standard was determined for item number ten regarding equipment. The basic assumption used was that each type of audiovisual equipment is about equal to any other type of audiovisual equipment in the opportunity it provides for the use of audiovisual materials. The completely ideal number of any given type was assumed to be one of each type per teacher. Experience in interviewing indicated that twenty (20) different types of equipment was the total number of types to be considered. Since item number 10 was assigned a value of 200 points , out of a total of 1,000, the problem in scoring was in translating the number of pieces of equipment available in a school into some proportion of 200. The formula developed is as follows:

$$\frac{\text{Total pieces of equipment}}{\text{No. of teachers} \times 20} \times 200 = \text{worth of item 10.}$$

Experience in the interviews indicated that no school would come near the ideal. In fact, it appeared that the total pieces of equipment would be less than 100 for a 30 teacher school. Using the above formula, this would result in the following calculation.

$$\frac{100}{30 \times 20} \times 200 = \frac{100}{600} \times 200 = 33.3$$

In order to bring the best schools close to the desired 200 points, it would be necessary to multiply the total by 6.

In other words: $\frac{\text{Total pieces of equipment}}{\text{No. of teachers} \times 20} \times 200 \times 6 = \text{worth item 10}$

Then: $\frac{\text{Total pieces of equipment}}{\text{No. of teachers} \times 20} \times 1200 = \text{worth of item 10}$

Finally: $\frac{\text{Total pieces of equipment} \times 60}{\text{No. of teachers}} = \text{worth of item 10}$

Item number eleven (11) in the School Description tallied the number of pieces of different kinds of instructional materials available to the teacher. An examination of the information on this item obtained in the early stages of interviewing indicated that the absolute maximum that might be achieved by any school in this category would be in the neighborhood of about 1800 items total, when applied to a thirty-teacher school. The arbitrary formula, then, considered 1800 as the maximum figure obtainable, or 60 separate pieces per teacher in a 30 teacher school. In order to arrive at the maximum of 150 points assigned to item number 11, the following formula was devised.

$$\frac{\text{Total pieces of instructional materials}}{\text{Number of teachers x 60}} \text{ x } 150 = \text{worth item 11.}$$

The total number of points that any school could obtain on the School Description inventory was 1,000. No school attained this arbitrary limit.

5.2 Classroom Description

The Classroom Description inventory was filled out by the interviewer as one of the first activities after the visit with the chief administrator. This was accomplished under varying circumstances, sometimes while observing the teacher, sometimes before or after the class had assembled or had been dismissed, sometimes while the class was in session. As may be observed from the Classroom Description (see Appendix), much of the information requested was of a factual nature, acquired by observing in the classroom and by getting it from the teacher. Items 7 and 8 particularly required information from the teacher since each of the items concerned the equipment and materials which were deposited in the classroom on a permanent basis. With the exception of item number one, each of the items was assigned a value so that the total score would be 1,000 for an ideal classroom. The weightings may be observed on the instrument in the Appendix of this report. The values for items 9, 10, 11, and 12 were arrived at in terms of a presumed maximum of linear feet of chalkboard, bulletin board, and display space one might expect to be available in the room.

Item 11 required an estimate of the square feet of work space available. By dividing an arbitrary maximum of 400 square feet by 4, it was estimated that a reasonable value for the item would be determined. Thus, the Classroom Description score was the total value assigned to each of the weighted items. As might be expected, no classroom approached the ideal.

5.3 Class Visitation Check List

The average time that the interviewer observed in the classroom was between forty and sixty minutes. During this time the Class Visitation Check List was filled-in. As may be seen in the Appendix, the Checklist contained thirty-five (35) items to be checked on a continuum: poor, fair, good, excellent, and not used. The possible range of scores was from 0 (poor) to 300 (Excellent). The computation involved the multiplication of the mean response by 100. The "not used" was treated as no information and was not included in the calculations.

In deriving the mean response score, the values for the total number of responses were added and divided by the actual number of responses. In a sense, the resulting score was actually an average of the quality of use of those items which were in fact being used during the time that the interviewer was in the classroom. The score does not represent how many out of the thirty-five items were being used. An actual counting of the number of items checked indicates that there was an average of about five items out of thirty-five being used during the course of 228 visits.

There are two principal limitations to the Class Visitation score. They are the significant differences among the three interviewers in evaluating classroom performance and the length of time that the interviewer spent in the classroom. The former problem was discussed at some length in a previous section of this report (4.1 Variability Among Interviewers, p. 81). The factor of time requires a few comments.

As was indicated, the average time spent by the interviewers in the classroom was somewhere in the range from forty to sixty minutes. Considering the amount of time during the day, a week, and a year that a teacher has available, it must be conceded that the period of time the interviewer spent in the classroom was indeed a small fraction of the total time available to the teacher. As a consequence, it is unlikely that the interviewer could get a fair estimate of the teacher's overall pattern of use of audio-visual materials and equipment. It would appear, therefore, that the instruments that the teacher checked regarding use would be a more valid measure. On the other hand, while this discussion may tend to diminish the usefulness of the Class Visitation instrument, it should be remembered that the evidence concerning non-use of a great number of items over the course of 228 visits can not be dismissed as having no significance. In the experience of the interviewers, it was indeed a rare occasion to find a teacher using projection of any kind or engaging in much more than the use of traditional verbal and symbolic materials.

5.4 Open-end Interview

Up to this point, the instruments discussed were all those completed by the interviewer. The rest of the interview schedules were filled-in by the teacher.

The first schedule for the teacher, in order of use, was the instrument titled Interview Notes. This was placed first because the procedure required that the teacher recall those aspects of the course or pattern at a point in time during the interview when the teacher had not been influenced by having responded to the other instruments which listed course content.

During a time when the teacher was free of classroom duties, the interviewer asked the teacher to recall - with no thought to importance or priority - all aspects of the audiovisual course that could be remembered. As the teacher spoke, the interviewer wrote responses on the interview form. The interviewer served no other purpose than to continue to ask whether the teacher could recall any other details. Once the teacher had exhausted the recall repertoire, the interviewer requested the teacher to rate the responses that had been recalled on a scale relating the items to usefulness in teaching. The scale and values assigned were: exceptionally useful (30), very useful (20), useful (10), no response (0), not needed (negative).

The value of this interview schedule was in its indication of those parts of the course - regardless of pattern - which were remembered by the teachers in an unstructured interview situation. The responses to this schedule will be discussed in the summary of results of Phase Two.

5.5 Course Opinionnaire

The Course Opinionnaire was designed to judge the attitudes of the teachers towards the audiovisual course in general. The Opinionnaire was composed of thirty-seven pairs of opposite words, with the two words in each pair at opposite ends of a seven point scale. In the scoring, the composite score was based on thirty-six items rather than the original thirty-seven.

It will be recalled from an earlier discussion about the change of format on several of the interview schedules that the Course Opinionnaire was not changed in form, but expanded into two identical opinionnaires. One required reaction to the lecture portion of the course and the other asked a reaction to the laboratory portion of the course. An analysis was made of the format change in terms of the influence of the change upon relationships of the two opinionnaires with the elementary-secondary factor, the semester enrolled in the audiovisual course sex, and pattern of instruction. In all of these comparisons, it will be recalled, there were no significant differences. Hence, it was concluded that the two opinionnaires could be combined to give a composite score.

Comparing the composite score of the two opinionnaires with the single score obtained in the earlier form of the opinionnaire, in other words, the "100" series with the "500" series, it was found that the format change did not contribute to any significant changes in the scores of the single instrument versus the composite of the two opinionnaires.

Scoring of the opinionnaire was done on a seven point scale, with the negative pole of the word opposites assigned the value of zero. The next position on the scale was assigned a value of "1", and so on up the scale to a top value of "6". The score of each individual was the mean score for the thirty-six items in the opinionnaire.

5.6 Course Effectiveness Inventory

The Course Effectiveness Inventory listed forty-eight items which had been included in the audiovisual course. The teacher was asked to rate the "helpfulness" of the course in preparing the teacher to do the things listed. For example, "To what degree did your Audio-Visual Methods course help prepare you to do the following? . . . Using a recording; using felt board materials; running a motion picture projector; teaching with models; keeping a study table in your classroom; and so forth."

The scale for evaluating the helpfulness of the various items consisted of a continuum of seven categories, grouped under three evaluative headings: very helpful, helpful, not helpful (see Appendix). Values for the seven categories ranged from zero for "not helpful" to six for "very helpful". The score represented the mean value of all responses.

5.7 Frequency of Use Inventory

The Frequency of Use Inventory (see Appendix) listed twenty-seven (27) items intended to document the teacher's use of audiovisual materials in the classroom. This differed from the Class Visitation form that the interviewer filled out while visiting the classroom in that it represented the use of specific audiovisual materials over the span of time that the teacher had been teaching since graduating from the University. The interviewer recorded use only in terms of those things that were used during his visit.

The teacher responded to the twenty-seven items on the Inventory by filling in the appropriate position on a scale indicating extent of use: very frequently, frequently, occasionally, seldom, never. Scoring was on a four point scale with "never" having a value of zero, and, at the other extreme, "very frequently" having a value of four (4). The mean response for the total array of items was calculated and this figure was multiplied by 100.

5.8 Inclusion of Fall 1959 Population in Follow-up

In Phase One of this project, the populations involved in the experimental patterns during the Fall Semester, 1959 were excluded from the analysis of Phase One. This was done because some of the details of the experiment were in varying stages of development. In addition, some of the evaluation instruments for Phase One were being improved during that semester. In spite of these limitations, however, there are some arguments for including the students from the Fall, 1959 as participants in the follow-up phases of the project.

Perhaps the most important point in favor of inclusion is that in essence the participants in the Fall, 1959 received the same kinds of instruction as all of the students in the succeeding semesters. The patterns of instruction in which they were enrolled were the same in character as the same patterns employed in the succeeding semesters.

As far as basic abilities among the students in the four semesters is concerned, there were no significant differences among them on the Cumulative Average measure used as a basis for equating groups. In addition, the students in the Fall, 1959 were assigned to the various patterns through a system of randomization, as was true - with some adjustments for circumstances - for the following semesters.

Considering the smaller numbers of students available for follow-up purposes, it was decided to make an analysis of the effects of the inclusion of the 47 teachers who had taken the audiovisual course in the Fall, 1959. As Tables 27, 28, and 29 show, the semester of enrollment in the audiovisual course had no effect upon the scores of the Course Effectiveness, Total Opinionnaire, Class Visitation, Frequency of Use, and School Description schedules. The one exception on Table 29 was a significant relationship at the .01 level of probability, between the semester and the Classroom Description score. This relationship is actually meaningless, however, because the semester in which a teacher was enrolled in the audiovisual course could not possibly have had any effect upon what was contained in the classroom. For all of these reasons then, the Fall, 1959 populations are included in the analyses of Phase Two.

TABLE 27. Relationship Between Semester Enrolled in Audiovisual Course and Course Effectiveness and Total Opinionnaire

Semester Enrolled	Course Effectiveness Score Mean	Total Opinionnaire Score Mean	Number
Fall 1959	325	367	47
Spring 1960	339	376	29
Fall 1960	358	399	63
Spring 1961	350	387	79
F-Value	.97 ns	1.42 ns	

ns Not significant

TABLE 28. Relationship Between Semester Enrolled in Audiovisual Course and Class Visitation and Frequency of Use

Semester Enrolled	Class Visitation Score Mean	Frequency of use Score Mean	Number
Fall 1959	220	179	47
Spring 1960	235	175	29
Fall 1960	217	165	63
Spring 1961	219	158	79
F-Value	.60 ns	1.53 ns	

ns Not significant

TABLE 29. Relationship Between Semester Enrolled in Audiovisual Course and School Description and Classroom Description

Semester Enrolled	School Description Score Mean	Classroom Description Score Mean	Number
Fall 1959	242	264	47
Spring 1960	291	303	29
Fall 1960	255	233	63
Spring 1961	256	244	79
F-Value	1.42 ns	4.33 **	

** Significant at .01 probability level.
ns Not significant

6. RESULTS: PHASE TWO

The results of Phase Two may be grouped into two broad categories. Category one is concerned with the comparisons of the four independent variables (patterns of instruction, the elementary-secondary factor, semester enrolled in the audiovisual course, and sex) with scores on the follow-up instruments. The second broad category is mainly descriptive in nature and provides a breakdown of responses to the details of the follow-up instruments.

The four independent variables in category one are compared with three types of information. One is the respondent's evaluation of the audiovisual course as measured by the Course Effectiveness Inventory, the Total Opinionnaire score, and the Laboratory and Lecture Opinionnaire scores when available.

The second type of information concerns the frequency and effectiveness of use of audiovisual materials and equipment as measured by the Frequency of Use score and the Class Visitation score. It should be remembered, however, that the latter instrument was correlated highly with the interviewer and as a consequence may not be a valid index of usage.

The third type of information is the relationship of the School Description and Classroom Description scores with the four independent variables.

6.1 Comparisons With Four Independent Variables

6.11 Course Effectiveness Inventory, Total Opinionnaire, and Open-end Interview

When the mean scores on the Course Effectiveness Inventory and the Total Opinionnaire were compared with the four variables: pattern of instruction, elementary-secondary factor, semester, and sex, the only significant difference that appeared was on the mean Total Opinionnaire score. Table 30 shows that the Self Study pattern was related to the latter factor at the .05 level of significance. This means that the Self Study pattern produced the most positive opinion towards the audiovisual course as measured by the semantic differentials represented by the Total Opinionnaire mean score. The Integrated pattern was second in order, with the Separate Course third.

A comparison of the Course Effectiveness Inventory and the Total Opinionnaire scores with the elementary-secondary factor, sex, and semester produced no significant differences. In other words, this means that the fact of being an elementary or secondary teacher, a male or female, or having taken the audiovisual course during a given semester had no effect upon the teacher's evaluation of the course effectiveness or general attitude towards the course as represented by a semantic differential.

An analysis was made of the relationship of the scores on the Open-end Interview with the four independent variables. None of the four factors related significantly with the Interview score. Table 31 indicates the items recalled by the teachers and their ranking in terms of the "usefulness"

TABLE 30. Relationship Between Pattern of Instruction and Respondent's Evaluation of Audiovisual Course as Indicated by Course Effectiveness Inventory and Total Opinionnaire Scores

Pattern of Instruction	Course Effectiveness Inventory Mean	Total Opinionnaire Score Mean	Number
Self Study	357	419	29
Separate Course	350	386	103
Integrated	369	393	32
Student Teaching Saturated	337	372	27
Student Teaching Unsaturated	297	347	26
F-Value	2.06 ns	2.90*	

ns Not Significant

* Significant at .05 level

value of each item. It appears that the most valued experience recalled by the teachers was the equipment practicum. Next in order was the knowledge and experience gained through the course in producing and using graphic materials, such as bulletin boards and posters. This latter evaluation corresponds with the Class Visitation check list in that, next to the chalkboard, the teachers used the bulletin board most frequently.

TABLE 31. Open-end Interview. Mean "Usefulness" Score and Rank of Items

Items	Mn
Equipment Practicum	20.95
Graphics	15.55
Using Instructional Resources	10.38
Still Pictures	10.09
Principles of Communication	9.00
Motion Pictures	8.03
3-D Materials	6.36
Contrived Experiences	5.14
Audio	4.71
Educational TV	1.14

6.12 Frequency of Use and Class Visitation

The Frequency of Use and Class Visitation scores were analysed in terms of pattern of instruction, elementary-secondary factor, sex and semester. Pattern of instruction and semester enrolled in the audiovisual course had no influence on the scores of the two instruments. The elementary-secondary factor and sex also had no influence on the scores of the Class Visitation instrument. On the other hand, the elementary-secondary factor and sex did have a very significant influence upon the Frequency of Use score. In fact, the significance was at the .001 level. Tables 32 and 33 show these differences.

TABLE 32. Relationship Between the Elementary-Secondary Teaching Factor and Frequency of Use and Class Visitation Scores

Elementary or Secondary	Frequency of Use Score Mean	Class Visitation Score Mean	Number
Elementary	195	223	121
Secondary	132	218	95
F-Value	85.28***	.28 ns	

ns Not Significant
*** Significant at .001 probability level.

It appears from Tables 32 and 33 that both sex and the elementary-secondary factor were highly related to frequency of use of audiovisual materials. The females were more likely to have higher scores than the males, and the elementary teachers were more likely to use audiovisual materials than the secondary teachers. Since most of the elementary teachers were females (95%) and most of the females were elementary teachers (74%), it was not clear whether sex or the elementary-secondary factor, or

TABLE 33. Relationship Between Sex and Frequency of Use and Class Visitation Scores

Sex	Frequency of Use Score Mean	Class Visitation Score Mean	Number
Male	140	218	71
Female	180	222	147
F-Value	24.58***	.32 ns	

ns Not significant

*** Significant at .001 probability level.

both, influenced the scores. Table 34 examines the relationship of both of these factors to Frequency of Use, using tabular controls in analysis to test the net effect of each. When sex was held constant, the effect of the elementary-secondary factor remained, with both the male and female elementary teachers using more audiovisual materials than secondary teachers of the same sex. The tabular controls removed the influence of the sex factor. This indicates that it was the distinction between the elementary and secondary teachers rather than between males and females that was most important in influencing the use of audiovisual materials.

TABLE 34. Relationship of Sex and the Elementary-Secondary Factor to Frequency of Use of Instructional Materials

Sex	Elementary		Secondary		F-Values
	$\bar{X}$	n	$\bar{X}$	n	
Male	202	6	135	64	10.80***
Female	194	111	128	30	40.76***
F-Values	.13 ns		.54 ns		

ns Not significant

*** Significant at .001 probability level

It will be recalled that the Class Visitation instrument recorded the audiovisual materials and equipment that the teacher was actually using during the time the interviewer visited in the classroom. It will also be recalled that there was some question about the validity of the instrument in documenting the quality of use of audiovisual materials and equipment by the teacher because of the significant differences among the interviewers in evaluating what had occurred in the classroom. Taking these factors into account, and not considering the quality of use, it is important to point out that the simple recording of what was used and what was not used is important in itself. This simple recording of use or non-use may be considered to be removed from any qualitative judgments. In this light, it is significant to examine what was being used with the greatest frequency by the teachers during the course of 228 visits.

Combining the observations made with the original and revised instruments, it appears that the teacher used an average of five different kinds of instructional materials out of a possible thirty-five during the course of the visit. Table 35 indicates the rank order of use of the ten most used items and the percentage of the 228 teachers who used each item.

TABLE 35. Classroom Visits. Rank Order and Frequency of Use of Materials

Item		Percentage of Use - N - 228
1.	Chalkboard	85
2.	Teacher-made bulletin boards	61
3.	Pupil-made bulletin boards	37
4.	Charts	32
5.	Demonstrations	30
6.	Study table	28
7.	Objects-specimens	22
8.	Flat pictures	21
9.	Diagrams	20
10.	Flat maps	10

All of the rest of the items in the Classroom Visitation list (see Appendix) were used by less than 10 percent of the teachers during the visit.

6.13 School and Classroom Description

The significant relationship of the elementary-secondary factor to Frequency of Use leads to the question whether the availability of materials and equipment accounts for the greater use by elementary teachers. An examination of the four independent variables (pattern of instruction, elementary-secondary factor, semester, and sex) in relation to School and Classroom Description revealed some significant relationships.

School and Classroom Description scores were not influenced significantly by pattern of instruction, or to any great extent by the semester the teacher had been enrolled in the audiovisual course. While there was a significance at the .01 level of probability between Classroom Description and semester (Table 29), the relationship is actually meaningless because it is highly unlikely that the semester the teacher had taken the audiovisual course could possibly have had any influence upon what was provided in the classroom for a beginning teacher.

Tables 36 and 37 show that the School Description and Classroom Description [illegible] influenced significantly by sex and the elementary-secondary factors. In one case, the significance was at the .01 level of probability. In three cases, the significance was at the .001 level of probability. Both the females and elementary teachers have higher School and Classroom Description scores than the males and secondary teachers. The relationship of sex to the variables is perhaps linked with the interrelationship between sex and the elementary-secondary factor. The relationship between the elementary-secondary factor and the School and Classroom Description scores suggests, however, that perhaps the simple availability of materials and equipment in the elementary schools leads to greater frequency of use.

TABLE 36. Relationship Between the Elementary-Secondary Factor and School Description and Classroom Description Scores

Elementary or Secondary	School Description Score Mean	Classroom Description Score Mean	Number
Elementary	291	280	121
Secondary	215	220	95
F-Value	34.75***	24.60***	

*** Significant at .001 probability level.

TABLE 37. Relationship Between Sex and School Description and Classroom Description Scores

Sex	School Description Score Mean	Classroom Description Score Mean	Number
Male	224	230	71
Female	274	264	147
F-Value	11.99***	6.86**	

** Significant at .01 probability level.
*** Significant at .001 probability level.

Tables 38 and 39 checked the possibility of this relationship by treating the effect of the elementary-secondary factor within the categories of Classroom and School Description scores, and the influence of the Classroom and School Description scores within the categories of the elementary-secondary factor.

TABLE 38. Relationship of School Description Score and the Elementary-Secondary Factor to Frequency of Use of Instructional Materials

School Description Score Quarter	Elementary		Secondary		F-Values
	$\bar{X}$	n	$\bar{X}$	n	
Low 1	184	15	124	31	15.44***
2	191	25	135	32	20.35***
3	193	33	137	23	14.78***
High 4	202	44	145	8	8.29***
F-Values	.58 ns		.61 ns		

ns Not significant

*** .001 significance

TABLE 39. Relationship of Classroom Description Score and the Elementary-Secondary Factor to Frequency of Use of Instructional Materials

Classroom Description Score Quarter	Elementary		Secondary		
	$\bar{X}$	n	$\bar{X}$	n	F-Values
Low 1	201	8	125	44	15.07***
2	180	27	142	26	8.99***
3	194	47	139	12	9.92***
High 4	206	35	135	12	21.42***
F-Values	1.31 ns		.82 ns		

ns Not significant

*** .001 significance

As can be seen from Tables 38 and 39, the elementary-secondary factor remained, but the Classroom Description and the School Description scores dropped out. This would seem to indicate that the simple availability of materials and equipment is not the important factor in influencing frequency of use but that it is the elementary-secondary factor.

6.2 Relationships of Availability of Materials and Equipment to Use

To pursue further the relationship of the elementary-secondary factor to the School and Classroom Descriptions as measures of the availability of materials and equipment, it is necessary to examine in some detail the question of availability. It will be remembered that the information about supplies of materials and equipment in the classroom was supplied mainly by the teacher, and through observation by the interviewer. It should also be noted that the teachers were asked what materials and pieces of equipment were placed permanently in the classroom. In other words, the materials and equipment that were supplied on a scheduled basis from outside the classroom inventory were not included in the Classroom Description but in the School Description.

6.21 Materials and Equipment Available in Classroom

Tables 40, 41, 42, and 43 provide the details on the equipment and materials available to the total sample and to the elementary and secondary classrooms separately.

Only a minority of the teachers had any of the items of equipment available in their classroom on a permanent basis. Twenty-nine percent of the teachers had record players available, 22 percent had easels, and 21 percent had felt boards. All of the other items listed on the tables were found to be assigned on a permanent basis only rarely. Elementary classrooms were more likely to have these items than secondary classrooms.

Materials most likely to be available in the classroom included maps, globes, wall charts, three-dimensionals, flat pictures, felt materials, flip charts and disc recordings. Where differences existed between the

TABLE 40. Equipment Available in Classroom (Total Sample)

Item	Frequency Distribution			Percentage Distribution			
	Have	Do Not	Total	Have	Do Not	Total	Number
Record Players	67	165	232	28.9	71.1	100.0	232
Easels	52	180	232	22.4	77.6	100.0	232
Felt Boards	49	183	232	21.1	78.9	100.0	232
Chalkboard (portable)	12	220	232	5.2	94.8	100.0	232
Bulletin Board (portable)	12	220	232	5.2	94.8	100.0	232
TV-open	9	223	232	3.9	96.1	100.0	232
Peg Board	8	224	232	3.4	96.6	100.0	232
Film Strip Projectors	6	226	232	2.6	97.4	100.0	232
Tape Recorder	5	227	232	2.2	97.8	100.0	232
Magnetic Tape	5	227	232	2.2	97.8	100.0	232
Micro Projectors	3	229	232	1.3	98.7	100.0	232
Movie Projectors (16mm)	3	229	232	1.3	98.7	100.0	232
Opaques	2	230	232	.9	99.1	100.0	232
Auto-Slide Projector	-	232	232	0	100.0	100.0	232
3 1/4 x 4 Projectors	-	232	232	0	100.0	100.0	232
Overhead	-	232	232	0	100.0	100.0	232
TV-closed	-	232	232	0	100.0	100.0	232
Teaching Machines	-	232	232	0	100.0	100.0	232
Movie Projectors (8mm)	-	232	232	0	100.0	100.0	232

TABLE 41. Relationship of Elementary-Secondary Factor to Equipment Available in Classroom

Item	Elementary			Secondary			X^2	Prob.	
	Have	Do Not	Total	Have	Do Not	Total			
Record Players	48.0	52.0	100.0	6.0	94.0	100.0	45.80	.001	
Easels	34.3	65.6	100.0	7.9	92.1	100.0	20.92	.001	
Felt Boards	37.6	62.4	100.0	1.0	99.0	100.0	42.59	.001	
Chalkboard (portable)	6.4	93.6	100.0	4.0	96.0	100.0	.26	ns	
Bulletin Board (portable)	7.2	92.8	100.0	3.0	97.0	100.0	1.23	.30	.20
TV-open	5.6	94.4	100.0	2.0	98.0	100.0	1.08	.30	.20
Peg Board	4.0	96.0	100.0	3.0	97.0	100.0	.003	ns	
Film Strip Projectors	1.6	98.4	100.0	4.0	96.0	100.0	.47	ns	
Tape Recorder	-	100.0	100.0	3.0	97.0	100.0	1.84	.20	.10
Magnetic Tape	3.2	96.8	100.0	1.0	99.0	100.0	.44	ns	
Micro Projectors	-	100.0	100.0	3.0	97.0	100.0	1.84	.20	.10
Movie Projectors (16mm)	-	100.0	100.0	3.0	97.0	100.0	1.84	.20	.10
Opaques	-	100.0	100.0	2.0	98.0	100.0	.76	ns	
Auto-Slide Projector	-	100.0	100.0	-	100.0	100.0	Invalid*		
3 1/4 x 4 Projectors	-	100.0	100.0	-	100.0	100.0	Invalid		
Overhead	-	100.0	100.0	-	100.0	100.0	Invalid		
TV-closed	-	100.0	100.0	-	100.0	100.0	Invalid		
Teaching Machines	-	100.0	100.0	-	100.0	100.0	Invalid		
Movie Projector (8mm)	-	100.0	100.0	-	100.0	100.0	Invalid		

ns Not significant

* Number of cases too small for Chi-square Tests

TABLE 42. Materials Available in Classroom (Total Sample)

Item	Frequency Distribution			Percentage Distribution			
	Have	Do Not	Total	Have	Do Not	Total	Number
Maps	98	134	232	42.2	57.8	100.0	232
Globes	93	139	232	40.1	59.9	100.0	232
Wall Charts	81	151	232	34.9	65.1	100.0	232
3-Dimensionals	64	168	232	27.6	72.4	100.0	232
Flat Pictures	54	178	232	23.3	76.7	100.0	232
Felt Material	41	191	232	17.7	82.3	100.0	232
Flip Charts	33	199	232	14.2	85.8	100.0	232
Disc Recordings	29	203	232	12.5	87.5	100.0	232
Film Strips	12	220	232	5.2	94.8	100.0	232
Tapes	7	225	232	3.0	97.0	100.0	232
Programmed Material (book)	3	229	232	1.3	98.7	100.0	232
Magnetic Material	2	230	232	.9	99.1	100.0	232
Motion Pictures	-	232	232	0	100.0	100.0	232
Programmed Material (mach.)	-	232	232	0	100.0	100.0	232

TABLE 43. Relationship of Elementary-Secondary Factor to Materials Available in Classroom

Item	Elementary			Secondary			X^2	Prob.	
	Have	Do Not	Total	Have	Do Not	Total			
Maps	54.4	45.6	100.0	26.7	73.3	100.0	16.44	.001	
Globes	67.2	32.8	100.0	8.9	91.1	100.0	75.98	.001	
Wall Charts	32.8	67.2	100.0	38.6	61.4	100.0	.59	ns	
3-Dimensionals	26.4	73.6	100.0	30.7	69.3	100.0	.32	ns	
Flat Pictures	30.4	69.6	100.0	11.9	88.1	100.0	10.08	.01	.001
Felt Material	30.4	69.6	100.0	2.0	98.0	100.0	29.07	.001	
Flip Charts	13.6	86.4	100.0	14.9	85.1	100.0	.006	ns	
Disc Recordings	19.2	80.8	100.0	4.0	96.0	100.0	10.58	.01	.001
Film Strips	2.4	97.6	100.0	8.9	91.1	100.0	3.51	.10	.05
Tapes	.8	99.2	100.0	4.0	96.0	100.0	1.34	ns	
Programmed Material (book)	.8	99.2	100.0	2.0	98.0	100.0	.03	ns	
Magnetic Material	.8	99.2	100.0	1.0	99.0	100.0	.31	ns	
Motion Pictures	-	100.0	100.0	-	100.0	100.0	Invalid*		
Programmed Material (mach.)	-	100.0	100.0	-	100.0	100.0	Invalid		

ns Not significant

* Number of cases too small for Chi-square Tests

elementary and secondary classrooms, the elementary teacher was more likely to have these items available than was the secondary teacher. Thus, in regard to the availability of materials and equipment in the classroom, the elementary teacher has the advantage, even though the range of types of materials and equipment is rather narrow.

6.22 Materials and Equipment Available in Schools

Since the availability of materials and equipment to the teacher is not confined to the classroom, it is important to examine the materials and equipment available in the school system itself and also the materials which are produced in the school as supports for the classroom teacher.

Tables 44 through 47 examine the availability of equipment and materials in the school in relation to the total sample and the distribution among elementary and secondary schools.

TABLE 44. Materials Available in Schools (Total Sample)

Item	Frequency Distribution				Percentage Distribution			
	Have	Do Not	Total	No Inf.	Have	Do Not	Total	No.
Maps	181	10	191	-	94.8	5.2	100.0	191
Globes	52	5	57	134	91.2	8.8	100.0	57
Disc. Recordings	168	23	191	-	88.0	12.0	100.0	191
Filmstrips	160	31	191	-	83.8	16.2	100.0	191
3-Dimensionals	92	99	191	-	48.2	51.8	100.0	191
Wall Charts	92	99	191	-	48.2	51.8	100.0	191
Pre-Recorded Tapes	79	112	191	-	41.4	58.6	100.0	191
Flat Picture Sets	73	118	191	-	38.2	61.8	100.0	191
Felt Board Materials	51	83	134	57	38.1	61.9	100.0	134
Flip Charts	67	124	191	-	35.1	64.9	100.0	191
TV Programs	46	145	191	-	24.1	75.9	100.0	191
Motion Pictures	15	176	191	-	7.9	92.1	100.0	191
Programmed Mat. (Bk.)	14	177	191	-	7.3	92.7	100.0	191
Radio Program	5	129	134	57	3.7	96.3	100.0	134
Programmed Mat. (Machine)	2	189	191	-	1.0	99.0	100.0	191

TABLE 45. Relationship of the Elementary-Secondary Factor to Materials Available in School

Item	Elementary			Secondary			X^2	Prob.
	Have	Do Not	Total	Have	Do Not	Total		
Maps	94.2	5.8	100.0	95.4	4.6	100.0	.001	ns
Globes	100.0	0	100.0	83.3	16.7	100.0	Invalid*	
Disc. Recordings	85.6	14.5	100.0	90.8	9.2	100.0	.781	ns
Filmstrips	76.0	24.0	100.0	93.1	6.9	100.0	9.015	.01 .001
3-Dimensionals	32.7	67.3	100.0	66.7	33.3	100.0	20.550	.001
Wall Charts	38.5	61.5	100.0	59.8	40.2	100.0	7.776	.01 .001
Pre-Recorded Tapes	16.3	83.7	100.0	71.3	28.7	100.0	56.685	.001
Flat Picture Sets	50.0	50.0	100.0	24.1	75.9	100.0	12.343	.001
Felt Board Materials	62.3	37.7	100.0	5.3	94.7	100.0	42.852	.001
Flip Charts	32.7	67.3	100.0	37.9	62.1	100.0	.363	ns
TV Programs	38.5	61.5	100.0	6.9	93.1	100.0	24.108	.001
Motion Pictures	4.8	95.2	100.0	11.5	88.5	100.0	2.080	ns
Programmed Material (Book)	5.8	94.2	100.0	9.2	90.8	100.0	.390	ns
Radio Programs	6.5	93.5	100.0	0	100.0	100.0	Invalid	
Programmed Material (Mach.)	1.9	98.1	100.0	0	100.0	100.0	Invalid	

ns Not significant

* Number of cases too small for Chi-square Tests

TABLE 46. Equipment Available in School (Total Sample)

Item	Frequency Distribution				Percentage Distribution			
	Have	Do Not	Total	No Inform.	Have	Do Not	Total	Number
Record Player	190	1	191	-	99.5	.5	100.0	191
16mm Movie Projector	186	5	191	-	97.4	2.6	100.0	191
Comb. Slide-Film Strip	128	6	134	57	95.5	4.5	100.0	134
Tape Recorder	182	9	191	-	95.3	4.7	100.0	191
Opaque Projector	156	35	191	-	81.7	18.3	100.0	191
Portable Chalkboard	135	56	191	-	70.7	29.3	100.0	191
Open Circuit TV	132	59	191	-	69.1	30.9	100.0	191
Radio	87	47	134	57	64.9	35.1	100.0	134
Easel	82	52	134	57	61.2	38.8	100.0	134
Micro Projector	109	82	191	-	57.1	42.9	100.0	191
Felt Board	74	60	134	57	55.2	44.8	100.0	134
Filmstrip Viewer	52	82	134	57	38.8	61.2	100.0	134
Overhead Projector	72	119	191	-	37.7	62.3	100.0	191
Filmstrip Projector	59	132	191	-	30.9	69.1	100.0	191
3 1/4 x 4 Slide Projector	54	137	191	-	28.3	71.7	100.0	191
Portable Bulletin Board	40	151	191	-	20.9	79.1	100.0	191
2 x 2 Slide Projector	20	171	191	-	10.5	89.5	100.0	191
Teaching Machine	14	177	191	-	7.3	92.7	100.0	191
Auto 2 x 2 Slide	12	179	191	-	6.3	93.7	100.0	191
8mm Movie Projector	6	185	191	-	3.1	96.9	100.0	191
Closed Circuit TV	1	190	191	-	.5	99.5	100.0	191

TABLE 47. Relationship of the Elementary-Secondary Factor to Equipment Available in School

Item	Elementary			Secondary			X^2	Prob.
	Have	Do Not	Total	Have	Do Not	Total		
Record Player	99.0	1.0	100.0	100.0	0.0	100.0	Invalid*	
16mm Movie Projector	96.2	3.8	100.0	98.9	1.1	100.0	Invalid	
Comb. Slide & Film St.	96.1	3.9	100.0	94.7	5.3	100.0	Invalid	
Tape Recorder	91.3	8.7	100.0	100.0	0.0	100.0	Invalid	
Opaque Projector	69.2	30.8	100.0	96.6	3.4	100.0	21.827	.001
Portable Chalkboard	63.5	36.5	100.0	79.3	20.7	100.0	5.006	.05 .02
Open Circuit TV	71.2	28.8	100.0	66.7	33.3	100.0	.263	ns
Radio	62.3	37.7	100.0	68.4	31.6	100.0	.298	ns
Easel	76.6	23.4	100.0	40.4	59.6	100.0	16.650	.001
Micro Projector	51.9	48.1	100.0	63.2	36.8	100.0	2.027	ns
Felt Board	84.4	15.6	100.0	15.8	84.2	100.0	59.652	.001
Filmstrip Viewer	45.5	54.5	100.0	29.8	70.2	100.0	2.744	ns
Overhead Projector	17.3	82.7	100.0	62.1	37.9	100.0	38.513	.001
Filmstrip Projector	29.8	70.2	100.0	32.2	67.8	100.0	.039	ns
3 1/4 x 4 Slide Projector	17.3	82.7	100.0	41.4	58.6	100.0	12.367	.001
Port. Bulletin Board	20.2	79.8	100.0	21.8	78.2	100.0	.010	ns
2 x 2 Slide Projector	7.7	92.3	100.0	13.8	86.2	100.0	1.286	ns
Teaching Machine	4.8	95.2	100.0	10.3	89.7	100.0	1.397	ns
Auto 2 x 2 Slide	3.8	96.2	100.0	9.2	90.8	100.0	1.477	ns
8mm Movie Projector	1.0	99.0	100.0	5.7	94.3	100.0	Invalid	
Closed Circuit TV	0.0	100.0	100.0	1.1	98.9	100.0		

ns Not significant

* Number of cases too small for Chi-square Tests

In regard to materials, secondary schools were more likely to have maps, disc recordings, filmstrips, three-dimensionals, wall charts, pre-recorded tapes, flip charts, motion pictures, and programmed books. Elementary schools were more likely than secondary to have globes, flat pictures, felt board materials, television programs, radio programs, and machine programmed materials. The differences between the elementary and secondary school are small, however. In the cases where the differences were statistically significant, the secondary school had the advantage in regard to filmstrips, three-dimensionals, wall charts, and pre-recorded tapes. Elementary schools had the advantage in flat pictures, felt board materials and television programs.

In the area of equipment, the differences between the elementary and secondary schools were small. Where the differences are statistically significant, it is interesting to note that the secondary schools had more opaque projectors, portable chalkboards, overhead projectors, and 3 1/4 x 4 slide projectors. Elementary schools had more easels and feltboards.

Tables 48 and 49 summarize the production of materials in 190 schools. Both the secondary and elementary schools produce mostly in the areas of spirit duplication, graphs, posters, and charts. Where there are significant differences between the elementary and secondary schools in the sample, the secondary schools produce more in the areas of ink duplication, flat pictures, overhead transparencies, still photographs, 2 x 2 slides, models, and motion pictures. Perhaps most of the production in motion pictures in the secondary schools is done by the athletic department in documenting football games.

TABLE 48. Production of Materials for the Total Sample

Item	Frequency Distribution Produce	Do Not	Total	No Inform.	Percentage Distribution Produce	Do Not	Total	No. Inform.
Spirit Duplicator	178	12	190	1	93.7	6.3	100.0	190
Graphs	172	18	190	1	90.5	9.5	100.0	190
Posters	172	18	190	1	90.5	9.5	100.0	190
Charts	171	19	190	1	90.0	10.0	100.0	190
Ink Duplicator	120	70	190	1	63.2	36.8	100.0	190
Flat Pictures	75	115	190	1	39.5	60.5	100.0	190
Overhead Transparencies	56	134	190	1	29.5	70.5	100.0	190
Still Photographs	43	147	190	1	22.6	77.4	100.0	190
2 x 2 Slides	39	151	190	1	20.5	79.5	100.0	190
Models	34	156	190	1	17.9	82.1	100.0	190
Dioramas	29	161	190	1	15.3	84.7	100.0	190
Motion Pictures	21	169	190	1	11.1	88.9	100.0	190
3 1/4 x 4 Slides	21	169	190	1	11.1	88.9	100.0	190

TABLE 49. Relationship of the Elementary-Secondary Factor to Production of Materials

Item	Elementary			Secondary			X^2	Prob.	
	Produce	Do Not	N	Produce	Do Not	N			
Spirit Duplicator	94.2	5.8	103	93.1	6.9	87	.002	ns	
Graphs	94.2	5.8	103	86.2	13.8	87	2.63	ns	
Posters	95.1	4.9	103	85.1	14.9	87	4.49	.05	.02
Charts	93.2	6.8	103	86.2	13.8	87	1.85	ns	
Ink Duplicator	47.6	52.4	103	81.6	18.4	87	220.34	.001	
Flat Pictures	33.0	67.0	103	47.1	52.9	87	3.37	.10	.05
Overhead Transparencies	16.5	83.5	103	44.8	55.2	87	168.69	.001	
Still Photographs	7.8	92.2	103	40.2	59.8	87	26.56	.001	
2 x 2 Slides	12.6	87.4	103	29.9	70.1	87	7.59	.01	.001
Models	15.5	84.5	103	20.7	79.3	87	5.38	.05	.02
Dioramas	16.5	83.5	103	13.8	86.2	87	1.00	ns	
Motion Pictures	3.9	96.1	103	19.5	80.5	87	10.21	.01	.001
3 1/4 x 4 Slides	6.8	93.2	103	16.1	83.9	87	32.47	.001	

ns Not significant

6.3 Teacher Report of Frequency of Use

In the previous discussion of Tables 32 and 33, it was evident that the Frequency of Use mean score was highly related to sex and the elementary-secondary factors. Table 34 factored out sex as the significant factor and indicated that the elementary-secondary factor seemed the most important in determining frequency of use of audiovisual materials and equipment. The analyses in the above tables, however, did not include any details of what actually was used by the elementary and secondary teachers, nor to what degree. This discussion will provide these details and will attempt to provide greater insights into the relationship of the elementary-secondary factor to frequency of use.

It will be recalled that the Frequency of Use Inventory was a recording by 220 plus teachers of their estimate of actual use of audiovisual materials and equipment in teaching. In Table 50 the rank order of use is given for the total sample. The teachers ranking agrees with the observations of the interviewer during the classroom visitation. It appears that the most frequently used items are those which are relatively inexpensive and easily available.

Table 51 shows the relationship of the elementary-secondary factor to items in the Frequency of Use Inventory. Elementary teachers are more likely than secondary teachers to use bulletin boards, flat pictures, study tables, record players, exhibits, globes, maps, and felt boards. Perhaps some of these differences can be explained by the fact that the elementary classroom has more work space (143 ft. vs. 73 ft.), has more display surfaces (19 vs. 11 linear feet), and has more bulletin board space (18 vs. 11 linear feet). It appears that there may be a close relationship between the frequency of use of materials and equipment in the elementary classroom and the presence of those materials and equipment in the classroom. On the

TABLE 50. Frequency of Use Inventory

Item	Rank	Mean
Chalkboard	1	3.76
Bulletin Boards	2	3.54
Flat Pictures	3	3.34
Charts	4	3.23
Models	5	3.15
Study Table	6.5	3.12
Diagrams	6.5	3.12
Sound Motion Films	8.5	3.11
Record Player	8.5	3.11
Specimens	10.5	3.09
Exhibit	10.5	3.09
Filmstrip	12	3.08
Role Playing	13	3.06
Globes	14	2.98
Flat Maps	15	2.91
Felt Board	16	2.84
Graphs	17	2.77
2 x 2 Slides	18	2.68
Dioramas	19	2.66
Tape Recorder	20	2.58
Field Trip	21	2.57
Educational TV	22	2.54
Opaque Projection	23	2.52
3 1/4 x 4 Slides	24	2.51
Museum Displays	25	2.47
Overhead Projection	26	2.45
Educational Radio	27	2.40

other hand, one may wonder whether this use of certain items is more characteristic of the elementary classroom than of the secondary classroom because of the level of learners involved.

In connection with the use of materials by the elementary and secondary teachers, it is interesting to rearrange the frequency of use items on Table 51 into a rank order distribution. Ranking only the first fifteen items results in the following list:

TABLE 51. Relationship of Elementary-Secondary to Items in Frequency of Use Inventory

	Elementary		Secondary			
	$\bar{X}$	n	$\bar{X}$	n	F-Ratio	Significance
Chalkboard	3.90	123	3.64	102	1.25	ns
Bulletin Boards	4.01	123	3.01	103	25.76	.01
Flat Pictures	3.67	123	2.97	103	15.99	.01
Charts	3.37	122	3.12	103	1.98	ns
Models	3.22	121	3.06	103	1.00	ns
Study Table	3.41	123	2.76	102	11.46	.01
Diagrams	2.94	122	3.31	102	4.90	.05
Sound Motion Films	3.12	122	3.06	103	0.12	ns
Record Player	3.54	123	2.60	103	20.88	.01
Specimens	3.24	121	2.89	102	3.50	ns
Exhibit	3.44	122	2.68	103	20.22	.01
Filmstrip	3.17	121	2.96	102	1.05	ns
Role Playing	3.16	123	2.93	103	1.45	ns
Globes	3.32	123	2.58	103	13.04	.01
Flat Maps	3.09	123	2.65	101	4.29	.05
Felt Board	3.12	122	2.50	101	7.91	.01
Graphs	2.59	121	2.96	103	3.98	.05
2 x 2 Slides	2.67	122	2.66	103	0.003	ns
Dioramas	2.68	122	2.62	100	0.08	ns
Tape Recorder	2.53	123	2.60	103	0.13	ns
Field Trip	2.64	121	2.45	102	1.06	ns
Educational TV	2.44	123	2.57	103	0.40	ns
Opaque Projection	2.33	122	2.73	103	3.38	ns
3 1/4 x 4 Slides	2.40	121	2.60	101	0.74	ns
Museum Displays	2.41	121	2.51	102	0.19	ns
Overhead Projection	2.20	123	2.72	101	5.31	.05
Educational Radio	2.27	123	2.52	103	1.51	ns

ns Not significant.

Rank	Elementary	Secondary	
1	Bulletin Board	Chalkboard	
2	Chalkboard	Diagrams	
3	Flat Pictures	Charts	
4	Record Player	Models	4.5
5	Exhibit	Motion Pictures	4.5
6	Study Table	Bulletin Board	
7	Charts	Flat Pictures	
8	Globes	Filmstrips	8.5
9	Specimens	Graphs	8.5
10	Models	Role Playing	
11	Filmstrips	Specimens	
12	Role Playing	Study Table	
13	Motion Pictures	Opaque Projection	
14	Flat Maps	Overhead Projection	
15	Diagrams	Exhibit	

Within this distribution it is apparent that the secondary teachers report using motion pictures and filmstrips more frequently than elementary teachers. Secondary teachers also seem to use more projection than the elementary teachers. Note that opaque projection and overhead projection appear in the secondary column but not in the elementary column.

Tables 52, through 56 examine the relationship of sex to frequency of use in terms of the elementary-secondary factor and a comparison of use between men and women in elementary and secondary teaching. In general, the relationships appear to be closely related to the elementary-secondary factor and the fact that the females were predominantly elementary teachers and the males secondary teachers. When the elementary-secondary factor was controlled, the differences were for the most part cancelled. That is, within the elementary grouping, sex was not for the most part related to frequency of use. Within the secondary grouping there were very few factors of use related to sex. It would seem, therefore, that the elementary-secondary factor is still the important variable in determining frequency of use. This underscores the findings of an earlier discussion about the relationships of the elementary-secondary factor and sex as they related to frequency of use of audiovisual materials and equipment.

It is interesting to note that the elementary-secondary factor seems to be important in the female grouping. That is, it apparently makes little difference (Table 55) whether the male is an elementary or secondary teacher. But it apparently does make a difference whether the female teacher in the elementary or secondary school (Table 56), because there are more comparisons of use in favor of the female elementary teacher than in favor of the female secondary teacher.

TABLE 52. Relationship of Sex to Items in Frequency of Use Inventory

	Male		Female			
	X	n	X	n	F-Ratio	Significance
Chalkboard	3.56	73	3.85	158	1.38	ns
Bulletin Board	2.96	74	3.82	158	16.17	.01
Flat Pictures	3.00	74	3.49	158	6.77	.01
Charts	3.16	74	3.26	157	.27	ns
Models	3.24	74	3.10	156	.66	ns
Study Table	2.82	73	3.26	158	4.48	.05
Diagrams	3.18	73	3.10	157	.21	ns
Sound Motion Films	3.11	74	3.11	157	.00	ns
Record Player	2.59	74	3.35	158	12.26	.01
Specimens	3.11	74	3.08	155	.02	ns
Exhibit	2.89	74	3.18	157	2.46	ns
Filmstrip	3.15	73	3.04	156	.25	ns
Role Playing	2.82	74	3.16	158	2.90	ns
Globes	2.64	74	3.14	158	5.38	.05
Flat Maps	2.60	73	3.05	157	4.05	.05
Felt Board	2.62	72	2.94	157	1.71	ns
Graphs	2.97	74	2.67	156	2.24	ns
2 x 2 Slides	2.84	74	2.60	157	1.09	ns
Dioramas	2.70	71	2.64	157	.07	ns
Tape Recorder	2.49	74	2.62	158	.39	ns
Field Trip	2.55	74	2.58	155	.02	ns
Educational TV	2.69	74	2.47	158	.97	ns
Opaque Projection	2.69	74	2.44	157	1.10	ns
3 1/4 x 4 Slides	2.56	73	2.48	155	.10	ns
Museum Displays	2.60	72	2.41	157	.61	ns
Overhead Projection	2.83	72	2.28	158	5.33	.05
Educational Radio	2.69	74	2.26	158	3.67	ns

ns Not significant

TABLE 53. Relationship of Sex to Items in Frequency of Use Inventory, Elementary Only

	Males		Females		F-Ratio	Significance
	$\bar{X}$	n	$\bar{X}$	n		
Chalkboard	3.33	6	3.93	117	0.67	ns
Bulletin Board	3.33	6	4.03	116	1.08	ns
Flat Pictures	2.50	6	3.75	116	4.67	.05
Charts	3.33	6	3.37	116	0.00	ns
Models	3.67	6	3.20	115	1.07	ns
Study Table	3.17	6	3.41	118	0.17	ns
Diagrams	2.40	5	2.95	118	1.01	ns
Sound Motion Films	3.67	6	3.09	116	1.00	ns
Record Player	3.67	6	3.53	118	0.05	ns
Specimens	2.83	6	3.26	115	0.71	ns
Exhibit	3.00	6	3.44	117	0.72	ns
Filmstrip	3.50	6	3.16	116	0.32	ns
Role Playing	2.83	6	3.18	117	0.38	ns
Globes	2.83	6	3.34	117	0.81	ns
Flat Maps	2.67	6	3.11	117	0.50	ns
Felt Board	2.67	6	3.15	116	0.59	ns
Graphs	2.33	6	2.60	115	0.21	ns
2 x 2 Slides	3.50	6	2.63	116	1.84	ns
Dioramas	2.17	6	2.71	116	0.81	ns
Tape Recorder	2.83	6	2.51	117	0.27	ns
Field Trip	2.67	6	2.64	115	0.00	ns
Educational TV	3.17	6	2.40	117	1.39	ns
Opaque Projection	1.67	6	2.34	115	1.05	ns
3 1/4 x 4 Slides	1.83	6	2.43	115	0.78	ns
Museum Displays	2.60	5	2.41	116	0.08	ns
OverheadProjection	2.50	6	2.19	117	0.21	ns
Educational Radio	3.17	6	2.22	117	2.53	ns

ns Not significant

TABLE 54. Relationship of Sex to Items in Frequency of Use Inventory, Secondary Only

	Males		Females		F-Ratio	Significance
	X	n	X	n		
Chalkboard	3.58	67	3.74	35	0.18	ns
Bulletin Board	2.93	68	3.17	35	0.83	ns
Flat Pictures	3.04	68	2.83	35	0.81	ns
Charts	3.15	68	3.06	35	0.11	ns
Models	3.21	68	2.77	35	2.30	ns
Study Table	2.79	67	2.71	35	0.06	ns
Diagrams	3.24	68	3.47	34	0.72	ns
Sound Motion Films	3.06	68	3.06	35	0.00	ns
Record Player	2.50	68	2.80	35	0.91	ns
Specimens	3.13	68	2.41	34	5.03	.05
Exhibit	2.88	68	2.29	35	4.66	.05
Filmstrip	3.12	67	2.66	35	2.13	ns
Role Playing	2.86	65	3.14	35	0.76	ns
Globes	2.62	68	2.51	35	0.08	ns
Flat Maps	2.60	67	2.76	34	0.23	ns
Felt Board	2.62	66	2.26	35	0.89	ns
Graphs	3.03	68	2.83	35	0.46	ns
2 x 2 Slides	2.78	68	2.43	35	0.98	ns
Dioramas	2.71	66	2.37	35	0.83	ns
Tape Recorder	2.46	68	2.89	35	1.72	ns
Field Trip	2.54	68	2.26	34	0.70	ns
Educational TV	2.65	68	2.43	35	0.43	ns
Opaque Projection	2.78	68	2.63	35	0.16	ns
3 1/4 x 4 Slides	2.63	67	2.56	34	0.03	ns
Museum Displays	2.60	67	2.34	35	0.48	ns
Overhead Projection	2.86	66	2.46	35	1.27	ns
Educational Radio	2.65	68	2.29	35	1.03	ns

ns Not significant

TABLE 55. Relationship of Elementary-Secondary to Items in Frequency of Use Inventory, Males Only

	Elementary		Secondary			
	X	n	X	n	F-Ratio	Significance
Chalkboard	3.33	6	3.58	67	0.10	ns
Bulletin Boards	3.33	6	2.93	68	0.57	ns
Flat Pictures	2.50	6	3.04	68	1.33	ns
Charts	3.33	6	3.15	68	0.12	ns
Models	3.67	6	3.21	68	0.70	ns
Study Table	3.17	6	2.79	67	0.35	ns
Diagrams	2.00	6	3.24	68	4.88	.05
Sound Motion Films	3.67	6	3.06	68	0.97	ns
Record Player	3.67	6	2.50	68	3.03	ns
Specimens	2.83	6	3.13	68	0.24	ns
Exhibit	3.00	6	2.88	68	0.05	ns
Filmstrip	3.50	6	3.12	67	0.36	ns
Role Playing	2.83	6	2.82	68	0.00	ns
Globes	2.83	6	2.62	68	0.09	ns
Flat Maps	2.67	6	2.60	67	0.01	ns
Felt Board	2.67	6	2.62	66	0.00	ns
Graphs	2.33	6	3.03	68	1.56	ns
2 x 2 Slides	3.50	6	2.78	68	1.08	ns
Dioramas	2.17	6	2.75	65	0.60	ns
Tape Recorder	2.83	6	2.46	68	0.31	ns
Field Trip	2.67	6	2.54	68	0.03	ns
Educational TV	3.17	6	2.65	68	0.55	ns
Opaque Projection	1.67	6	2.78	68	2.57	ns
3 1/4 x 4 Slides	1.83	6	2.63	67	1.03	ns
Museum Displays	2.60	5	2.60	67	0.00	ns
Overhead Projection	2.50	6	2.86	66	0.25	ns
Educational Radio	3.17	6	2.65	68	0.50	ns

ns Not significant

TABLE 56. Relationship of Elementary-Secondary to Items in Frequency of Use Inventory, Females Only

	Elementary		Secondary			
	X	n	X	n	F-Ratio	Significance
Chalkboard	3.93	117	3.74	35	0.32	ns
Bulletin Boards	4.04	117	3.17	35	8.39	.01
Flat Pictures	3.73	117	2.83	35	11.54	.01
Charts	3.37	116	3.06	35	1.36	ns
Models	3.20	115	2.77	35	3.50	ns
Study Table	3.43	117	2.71	35	6.81	.01
Diagrams	2.97	117	3.47	34	4.46	.05
Sound Motion Films	3.09	116	3.06	35	0.02	ns
Record Player	3.53	117	2.80	35	6.25	.05
Specimens	3.26	115	2.41	34	10.68	.01
Exhibit	3.47	116	2.29	35	23.63	.01
Filmstrip	3.12	116	2.66	35	2.59	ns
Role Playing	3.18	117	3.14	35	0.02	ns
Globes	3.34	117	2.51	35	8.84	.01
Flat Maps	3.11	117	2.76	34	1.31	ns
Felt Board	3.15	116	2.26	35	8.92	.01
Graphs	2.60	115	2.83	35	0.67	ns
2 x 2 Slides	2.63	116	2.43	35	0.42	ns
Dioramas	2.71	116	2.37	35	1.33	ns
Tape Recorder	2.51	117	2.89	35	1.71	ns
Field Trip	2.64	115	2.26	34	2.15	ns
Educational TV	2.40	117	2.43	35	0.01	ns
Opaque Projection	2.36	116	2.63	35	0.72	ns
3 1/4 x 4 Slides	2.43	115	2.56	34	0.14	ns
Museum Displays	2.41	116	2.34	35	0.04	ns
Overhead Projection	2.19	117	2.46	35	0.70	ns
Educational Radio	2.22	117	2.29	35	0.05	ns

ns Not significant

The examination of the relationships of pattern of instruction and semester that the teacher had been enrolled in the audiovisual course with the items on the frequency of use schedule did not reveal enough significant differences or patterns of response to warrant further consideration.

6.4 Analysis of Course Effectiveness Inventory

In the Course Effectiveness Inventory there were listed forty-eight items contained in the audiovisual course to which the teachers responded in terms of the "helpfulness" of the items in their teaching. This section will analyze the helpfulness of the items in relation to the elementary-secondary factor and the sex of the respondent.

Table 57 ranks the responses of the total population in terms of the helpfulness of the items. The values for the seven-category scale were zero for "not helpful", to six for "very helpful". In summarizing the scores, it appears that the greatest value was attached by the teachers to the learning of equipment operation. Among the first five positions are listed three which deal with equipment. It is equally significant that "understanding the role of materials in learning" was among the top five. A perusal of the rank order may suggest possible revisions in audiovisual courses, not only in terms of content but possibly in terms of emphasis.

TABLE 57. Rank Order of Items in Course Effectiveness Inventory

Item	Rank	Mean
Running motion picture projector	1	5.93
Threading filmstrip projector	2	5.73
Bringing real objects into class lesson	3	5.41
Running tape recorder	4	5.39
Understanding the role of materials in learning	5	5.30
Projecting materials properly	6	5.13
Designing bulletin board	7	5.03
Helping pupils study with movies	8	5.02
Selecting the right material for a given task	9	4.93

TABLE 57 (continued)

Item	Rank	Mean
Recognizing good instructional materials	10	4.92
Knowing source catalogues for AV materials	11	4.90
Choosing instructional materials to fit the learner	12	4.88
Planning chalkboard use	13	4.79
Studying with pictures	14	4.78
Using diagrams to teach	15	4.77
Choosing a filmstrip for a given lesson	16	4.76
Clarifying a bulletin board idea	17	4.71
Performing a class demonstration	18	4.70
Visualizing a point to be learned	19	4.67
Ordering motion pictures	20	4.65
Preparing follow-up activities	21	4.63
Teaching with models	22	4.59
Providing yourself with flat pictures	23	4.54
Judging when to use a given material	24	4.53
Using a recording	25.5	4.47
Drawing on chalkboard	25.5	4.47
Teaching with an opaque projector	27	4.34
Taking a field trip	28	4.30
Tape recording materials for study	29	4.24
Mounting pictures	30	4.21
Using felt board materials	31	4.18
Recognizing when a recording is useful	32	4.13
Helping pupils use maps	33	4.09
Locating needed pictures	34	4.05
Using words	35	4.02
Recommending a classroom design for instruction	36	4.00
Helping colleagues use materials	37	3.91
Judging still pictures	38	3.88
Learning from graphs	39.5	3.83
Seeing an educational TV program	39.5	3.83
Keeping a study table in your classroom	41.5	3.79
Storing instructional materials	41.5	3.79
Cleaning projector lenses	43	3.68
Constructing overhead transparencies	44	3.66
Explaining your program to your parents	45	3.63
Changing projection lamps	46	3.55
Constructing mock-ups	47	3.36
Using puppets with students	48	3.34

Tables 58 through 63 examine in some detail the interrelationships of the "helpfulness" of items and the elementary-secondary factor and sex. The total number of comparisons possible is 288. Out of this number there is a total of 47 significant differences between elementary and secondary and between males and females on separate items of the Inventory. Further examination of these differences indicates that about half of the 47 would be expected simply from the fact that the differences in favor of the elementary or secondary factor would be due to typical usage differences between the two types of classrooms. It appears, therefore, that the elementary-secondary factor and sex do not influence to a great degree the evaluation by the teachers of the helpfulness of certain items in the Course Effectiveness Inventory.

TABLE 58. Relationship of Elementary-Secondary to "Helpfulness" of Items in the Course Effectiveness Inventory

	Elementary		Secondary			
	X	n	X	n	F-Ratio	Significance
Running motion picture projector	6.04	121	5.83	99	0.91	ns
Threading filmstrip projector	6.04	122	5.37	101	8.32	.01
Bringing real objects into lesson	5.48	122	5.27	101	0.94	ns
Running tape recorder	5.59	121	5.07	102	4.41	.05
Understanding the role of materials in learning	5.30	122	5.25	102	0.04	ns
Projecting materials properly	5.06	123	5.26	102	1.17	ns
Designing bulletin board	5.16	122	4.82	103	2.21	ns
Helping pupils study with movies	5.12	121	4.94	102	0.58	ns
Selecting the right materials for a given task	4.81	122	5.03	103	0.97	ns
Recognizing good instruction materials	4.90	120	4.86	101	0.04	ns
Knowing source catalogues for AV mat.	4.88	121	4.94	103	0.07	ns
Choosing instruction materials to fit the learner	4.84	121	4.84	103	0.00	ns
Planning chalkboard use	4.37	120	5.28	101	14.22	.01
Studying with pictures	4.73	122	4.77	102	0.04	ns
Using diagrams to teach	4.50	119	5.08	101	6.32	.05
Choosing a filmstrip for a given lesson	4.88	121	4.62	101	1.04	ns
Clarifying a bulletin board idea	4.82	121	4.51	101	1.80	ns
Performing a class demonstration	4.59	121	4.78	101	0.63	ns
Visualizing a point to be learned	4.54	119	4.81	102	1.42	ns
Ordering motion pictures	4.73	119	4.50	102	0.80	ns
Preparing follow-up activities	4.66	122	4.60	102	0.07	ns
Teaching with models	4.44	121	4.73	103	1.50	ns
Providing yourself with flat pict.	4.51	122	4.49	102	0.01	ns
Judging when to use a given material	4.52	121	4.53	103	0.00	ns
Using a recording	4.68	120	4.16	103	4.06	.05

TABLE 58 (continued)

	Elementary		Secondary			
	X	n	X	n	F-Ratio	Significance
Drawing on chalkboard	4.29	120	4.69	103	2.41	ns
Teaching with an opaque projector	4.39	122	4.41	103	0.01	ns
Taking a field trip	4.32	121	4.20	102	0.24	ns
Tape recording materials for study	4.38	121	3.98	103	2.66	ns
Mounting pictures	4.41	122	3.86	102	5.38	.05
Using felt board materials	4.59	120	3.62	101	15.66	.01
Recognizing when a recording is useful	4.24	120	3.97	102	1.41	ns
Helping people use maps	4.44	122	3.68	103	9.66	.01
Locating needed pictures	4.07	123	3.98	102	0.14	ns
Using words	3.64	121	4.40	102	9.79	.01
Recommending classroom design for instruction	4.10	121	3.85	102	1.17	ns
Helping colleagues use materials	3.89	122	3.94	101	0.05	ns
Judging still pictures	3.93	121	3.75	102	0.65	ns
Learning from graphs	3.77	121	3.82	98	0.04	ns
Seeing an educational TV program	3.61	115	3.99	100	2.31	ns
Keeping a study table in your classroom	4.08	121	3.45	103	5.73	.05
Storing instructional materials	3.83	122	3.70	103	0.29	ns
Cleaning projector lenses	3.47	123	3.98	102	4.02	.05
Constructing overhead transparencies	3.59	121	3.82	102	0.76	ns
Explaining your program to your parents	3.57	122	3.66	102	0.13	ns
Changing projection lamps	3.30	122	3.91	103	5.12	.05
Constructing mock-ups	3.41	120	3.27	99	0.34	ns
Using puppets with students	3.92	119	2.53	102	28.76	.01

ns Not significant

TABLE 59. Relationship of Sex to "Helpfulness of Items in the Course Effectiveness Inventory

	Male		Female			
	X	n	X	n	F-Ratio	Significance
Running motion picture projector	5.88	72	5.96	155	0.14	ns
Threading filmstrip projector	5.38	73	5.89	157	4.08	.05
Bringing real objects into lesson	5.23	73	5.49	157	1.31	ns
Running tape recorder	4.95	73	5.60	157	6.44	.05
Understanding the role of materials in learning	5.21	73	5.34	157	0.40	ns
Projecting materials properly	5.45	73	4.98	159	5.58	.05
Designing bulletin board	4.82	74	5.13	158	1.51	ns

TABLE 59 (continued)

	Male		Female		F-Ratio	Significance
	X	n	X	n		
Helping pupils study with movies	5.11	74	4.98	156	0.28	ns
Selecting the right materials for a given task	4.93	74	4.92	158	0.00	ns
Recognizing good inst. materials	4.89	72	4.93	156	0.04	ns
Knowing source catalogues for AV materials	4.96	74	4.88	157	0.10	ns
Choosing inst. materials to fit the learner	4.73	74	4.94	157	0.75	ns
Planning chalkboard use	5.19	73	4.60	155	5.25	.05
Studying with pictures	4.61	74	4.87	157	1.16	ns
Using diagrams to teach	5.21	71	4.57	156	6.83	.01
Choosing a filmstrip for a given lesson	4.92	73	4.69	156	0.80	ns
Clarifying a bulletin board idea	4.56	73	4.78	156	0.80	ns
Performing a class demonstration	5.05	73	4.54	156	4.04	.05
Visualizing a point to be learned	4.71	73	4.65	155	0.06	ns
Ordering motion pictures	4.53	73	4.71	155	0.42	ns
Preparing follow-up activities	4.68	74	4.60	156	0.10	ns
Teaching with models	4.88	74	4.45	157	3.00	ns
Providing yourself with flat pict.	4.43	74	4.59	156	0.35	ns
Judging when to use a given material	4.50	74	4.54	157	0.03	ns
Using a recording	4.04	74	4.68	155	5.74	.05
Drawing on chalkboard	4.69	74	4.37	156	1.39	ns
Teaching with an opaque projector	4.51	74	4.25	158	1.06	ns
Taking a field trip	4.31	74	4.29	156	0.01	ns
Tape recording materials for study	3.99	74	4.36	157	2.12	ns
Mounting pictures	3.79	73	4.40	158	5.74	.05
Using felt board materials	3.67	73	4.43	155	8.29	.01
Recognizing when a recording is useful	3.82	74	4.27	155	3.54	ns
Helping people use maps	3.93	74	4.17	158	0.82	ns
Locating needed pictures	3.75	73	4.19	159	2.88	ns
Using words	4.51	74	3.78	156	8.22	.01
Recommending classroom design for instruction	3.90	73	4.04	157	0.34	ns
Helping colleagues use materials	3.97	72	3.88	158	0.13	ns
Judging still pictures	3.62	73	4.00	157	2.66	ns
Learning from graphs	4.17	70	3.68	156	4.08	.05
Seeing an educational TV program	4.08	72	3.71	150	1.97	ns
Keeping a study table in your classroom	3.38	74	3.98	157	4.65	.05
Storing instructional materials	3.54	74	3.91	158	2.23	ns
Cleaning projector lenses	4.28	74	3.39	157	11.57	.01
Constructing overhead transparencies	4.08	73	3.46	156	4.93	.05
Explaining your program to your parents	3.82	74	3.54	157	1.19	ns
Changing projection lamps	4.28	74	3.21	158	15.10	.01
Constructing mock-ups	3.40	73	3.35	153	0.04	ns
Using puppets with students	2.35	74	3.81	154	27.74	.01

TABLE 60. Relationship of Elementary-Secondary to "Helpfulness" of Items in the Course Effectiveness Inventory, Males Only

	Elementary		Secondary			
	X	n	X	n	F-Ratio	Significance
Running motion picture projector	5.50	6	5.91	66	0.29	ns
Threading filmstrip projector	5.50	6	5.37	67	0.02	ns
Bringing real objects into lesson	5.67	6	5.19	67	0.52	ns
Running tape recorder	5.00	6	4.94	67	0.00	ns
Understanding the role of materials in learning	5.17	6	5.21	67	0.01	ns
Projecting materials properly	5.33	6	5.46	67	0.05	ns
Designing bulletin board	6.17	6	4.71	68	5.47	.05
Helping pupils study with movies	5.67	6	5.06	68	0.91	ns
Selecting the right materials for a given task	5.50	6	4.88	68	0.92	ns
Recognizing good instruction material	5.50	6	4.83	66	1.44	ns
Knowing source catalogues for AV materials	5.50	6	4.91	68	0.62	ns
Choosing instruction material to fit the learner	4.83	6	4.72	68	0.03	ns
Planning chalkboard use	4.50	6	5.25	67	1.12	ns
Studying with pictures	5.33	6	4.54	68	1.19	ns
Using diagrams to teach	5.20	5	5.21	66	0.00	ns
Choosing a filmstrip for a given lesson	5.67	6	4.85	67	1.36	ns
Clarifying a bulletin board idea	5.83	6	4.45	67	4.65	.05
Performing a class demonstration	5.67	6	5.00	67	1.10	ns
Visualizing a point to be learned	5.17	6	4.67	67	0.55	ns
Ordering motion pictures	5.00	5	4.50	68	0.29	ns
Preparing follow-up activities	5.67	6	4.59	68	2.54	ns
Teaching with models	5.00	6	4.87	68	0.03	ns
Providing yourself with flat pict.	5.33	6	4.35	68	1.60	ns
Judging when to use a given material	4.83	6	4.47	68	0.36	ns
Using a recording	4.83	6	3.97	68	1.12	ns
Drawing on chalkboard	5.17	6	4.65	68	0.41	ns
Teaching with an opaque projector	4.83	6	4.49	68	0.24	ns
Taking a field trip	5.33	6	4.22	68	2.01	ns
Tape recording material for study	5.17	6	3.88	68	3.48	ns
Mounting pictures	5.17	6	3.67	67	5.03	.05
Using felt board materials	5.00	6	3.55	67	3.72	ns
Recognizing when a recording is useful	4.50	6	3.76	68	1.10	ns
Helping people use maps	5.67	6	3.78	68	5.97	.05
Locating needed pictures	4.67	6	3.67	67	1.47	ns
Using words	5.00	6	4.47	68	0.51	ns
Recommending classroom design for instruction	3.83	6	3.91	67	0.01	ns
Helping colleagues use materials	4.50	6	3.92	66	0.62	ns
Judging still pictures	4.67	6	3.52	67	3.41	ns

TABLE 60 (Continued)

	Elementary		Secondary		F-Ratio	Significance
	X	n	X	n		
Learning from graphs	4.83	6	4.11	64	1.07	ns
Seeing an educational TV program	4.17	6	4.08	66	0.02	ns
Keeping a study table in your classroom	4.17	6	3.31	68	1.16	ns
Storing instruction materials	4.17	6	3.49	68	0.97	ns
Cleaning projector lenses	4.33	6	4.28	68	0.00	ns
Constructing overhead transparencies	4.33	6	4.06	67	0.10	ns
Explaining your program to your parents	4.83	6	3.74	68	1.67	ns
Changing projection lamps	4.00	6	4.31	68	0.12	ns
Constructing mock-ups	4.83	6	3.27	67	4.53	.05
Using puppets with students	4.00	6	2.21	68	6.76	.05

TABLE 61. Relationship of Elementary-Secondary to "Helpfulness" of Items in the Course Effectiveness Inventory, Females Only

	Elementary		Secondary		F-Ratio	Significance
	X	n	X	n		
Running motion picture projector	6.07	115	5.67	33	1.68	ns
Threading filmstrip projector	6.07	116	5.35	34	4.85	.05
Bringing real objects into lesson	5.47	116	5.41	34	0.03	ns
Running tape recorder	5.62	115	5.31	35	0.81	ns
Understanding the role of materials in learning	5.30	116	5.34	35	0.02	ns
Projecting materials properly	5.04	117	4.89	35	0.32	ns
Designing bulletin board	5.11	116	5.03	35	0.05	ns
Helping pupils study with movies	5.09	115	4.71	34	1.17	ns
Selecting the right materials for a given task	4.78	116	5.31	35	2.67	ns
Recognizing good inst. material	4.87	114	4.91	35	0.02	ns
Knowing source catalogues for AV material	4.84	115	5.00	35	0.19	ns
Choosing instruction material to fit the learner	4.84	115	5.09	35	0.48	ns
Planning chalkboard use	4.36	114	5.32	34	7.08	.01
Studying with pictures	4.70	116	5.24	34	2.64	ns
Using diagrams to teach	4.46	114	4.83	35	1.10	ns
Choosing a filmstrip for a given lesson	4.83	115	4.18	34	3.11	ns
Clarifying a bulletin board idea	4.77	115	4.62	34	0.17	ns
Performing a class demonstration	4.53	115	4.35	34	0.22	ns
Visualizing a point to be learned	4.50	113	5.09	35	2.85	ns
Ordering motion pictures	4.72	114	4.50	34	0.35	ns

TABLE 61 (continued)

	Elementary		Secondary			
	X	n	X	n	F-Ratio	Significance
Preparing follow-up activities	4.60	116	4.62	34	0.00	ns
Teaching with models	4.41	115	4.46	35	0.02	ns
Providing yourself with flat pict.	4.47	116	4.76	34	0.65	ns
Judging when to use a given material	4.50	115	4.66	35	0.21	ns
Using a recording	4.67	114	4.54	35	0.12	ns
Drawing on chalkboard	4.25	114	4.77	35	2.02	ns
Teaching with an opaque projection	4.36	116	4.26	35	0.09	ns
Taking a field trip	4.27	115	4.15	34	0.11	ns
Tape recording material for study	4.34	115	4.17	35	0.20	ns
Mounting pictures	4.40	115	4.23	35	0.24	ns
Using felt board materials	4.57	114	3.76	34	5.00	.05
Recognizing when a recording is useful	4.23	114	4.38	34	0.21	ns
Helping people use maps	4.38	116	3.49	35	6.37	.05
Locating needed pictures	4.04	117	4.57	35	2.46	ns
Using words	3.57	115	4.26	34	3.78	ns
Recommending classroom design for instruction	4.11	115	3.74	35	1.28	ns
Helping colleagues use materials	3.85	116	3.97	35	0.11	ns
Judging still pictures	3.89	115	4.17	35	0.72	ns
Learning from graphs	3.71	115	3.26	34	1.87	ns
Seeing an educational TV program	3.58	109	3.82	34	0.43	ns
Keeping a study table in your classroom	4.08	115	3.71	35	0.85	ns
Storing instruction materials	3.81	116	4.11	35	0.73	ns
Cleaning projection lenses	3.43	117	3.38	34	0.02	ns
Constructing overhead transparencies	3.55	115	3.37	35	0.21	ns
Explaining your program to your parents	3.50	116	3.50	34	0.00	ns
Changing projector lamps	3.27	116	3.14	35	0.11	ns
Constructing mock-ups	3.33	114	3.28	32	0.02	ns
Using puppets with students	3.92	113	3.18	34	3.48	ns

TABLE 62. Relationship of Sex to "Helpfulness" of Items in the Course Effectiveness Inventory, Elementary Only

	Male		Female			
	X	n	X	n	F-Ratio	Significance
Running motion picture projector	5.50	6	6.07	115	0.74	ns
Threading filmstrip projector	5.50	6	6.07	116	0.74	ns
Bringing real objects into lesson	5.67	6	5.47	116	0.09	ns
Running tape recorder	5.00	6	5.62	115	0.72	ns
Understanding the role of materials in learning	5.17	6	5.30	116	0.04	ns

TABLE 62 (continued)

	Male		Female		F-Ratio	Signi-ficance
	$\bar{X}$	n	$\bar{X}$	n		
Projecting materials properly	5.33	6	5.04	117	0.23	ns
Designing bulletin board	6.17	6	5.11	116	1.80	ns
Helping pupils study with movies	5.67	6	5.09	115	0.64	ns
Selecting the right materials for a given task	5.50	6	4.78	116	1.12	ns
Recognizing good inst. materials	5.50	6	4.87	114	0.92	ns
Knowing source catalogues for AV mat.	5.50	6	4.84	115	0.73	ns
Choosing inst. materials to fit the learner	4.83	6	4.84	115	0.00	ns
Planning chalkboard use	4.50	6	4.36	114	0.03	ns
Studying with pictures	5.33	6	4.70	116	0.86	ns
Using diagrams to teach	5.20	5	4.46	114	0.82	ns
Choosing a filmstrip for a given lesson	5.67	6	4.83	115	1.14	ns
Clarifying a bulletin board idea	5.83	6	4.77	115	1.95	ns
Performing a class demonstration	5.67	6	4.53	115	2.06	ns
Visualizing a point to be learned	5.17	6	4.53	114	0.70	ns
Ordering motion pictures	5.00	5	4.72	114	0.11	ns
Preparing follow-up activities	5.67	6	4.60	116	2.44	ns
Teaching with models	5.00	6	4.41	115	0.66	ns
Providing yourself with flat pict.	5.33	6	4.47	116	1.22	ns
Judging when to use a given material	4.83	6	4.90	115	0.23	ns
Using a recording	4.83	6	4.67	113	0.05	ns
Drawing on chalkboard	5.17	6	4.25	114	1.39	ns
Teaching with opaque projector	4.83	6	4.36	116	0.40	ns
Taking a field trip	5.33	6	4.27	115	1.82	ns
Tape recording materials for study	5.17	6	4.34	115	1.17	ns
Mounting pictures	5.17	6	4.37	116	1.14	ns
Using felt board materials	5.00	6	4.57	114	0.30	ns
Recognizing when a recording is useful	4.50	6	4.23	114	0.16	ns
Helping people to use maps	5.67	6	4.39	115	2.96	ns
Locating needed pictures	4.67	6	4.04	117	0.80	ns
Using words	5.00	6	3.57	115	4.01	.05
Recommending classroom design for instruction	3.83	6	4.11	115	0.16	ns
Helping colleagues use materials	4.50	6	3.85	116	0.80	ns
Judging still pictures	4.67	6	3.89	115	1.28	ns
Learning from graphs	4.83	6	3.71	115	2.73	ns
Seeing educational TV programs	4.17	6	3.58	109	0.55	ns
Keeping a study table in your classroom	4.17	6	4.08	115	0.01	ns
Storing instruction material	4.17	6	3.81	116	0.23	ns
Cleaning projector lenses	4.33	6	3.43	117	1.59	ns
Constructing overhead transparencies	4.33	6	3.55	115	0.98	ns
Explaining your program to your parents	4.83	6	3.50	116	3.48	ns
Changing projector lamps	4.00	6	3.27	116	0.86	ns
Constructing mock-ups	4.83	6	3.33	114	4.76	.05
Using puppets with students	4.00	6	3.92	113	0.01	ns

TABLE 63. Relationship of Sex to "Helpfulness" of Items in the Course Effectiveness Inventory, Secondary Only

	Male		Female			
	X	n	X	n	F-Ratio	Significance
Running motion picture projector	5.91	66	5.67	33	0.44	ns
Threading filmstrip projector	5.37	67	5.35	34	0.00	ns
Bringing real objects into lesson	5.19	67	5.41	34	0.41	ns
Running tape recorder	4.94	67	5.31	35	0.85	ns
Understanding the role of materials in learning	5.21	67	5.34	35	0.21	ns
Projecting materials properly	5.46	67	4.89	35	3.94	.05
Designing bulletin board	4.71	68	5.03	35	0.96	ns
Helping pupils study with movies	5.06	68	4.71	34	0.99	ns
Selecting the right materials for a given task	4.88	68	5.31	35	1.55	ns
Recognizing good instruction mat.	4.83	66	4.91	35	0.07	ns
Knowing source catalogues for AV material	4.91	68	5.00	35	0.05	ns
Choosing instruction material to fit the learner	4.72	68	5.09	35	1.02	ns
Planning chalkboard use	5.25	67	5.32	34	0.04	ns
Studying with pictures	4.54	68	5.24	34	3.46	ns
Using diagrams to teach	5.21	66	4.83	35	1.25	ns
Choose a filmstrip for a given lesson	4.85	67	4.18	34	3.20	ns
Clarifying a bulletin board idea	4.45	67	4.62	34	0.25	ns
Performing a class demonstration	5.00	67	4.35	34	3.20	ns
Visualizing a point to be learned	4.67	67	5.09	35	1.55	ns
Ordering motion pictures	4.50	68	4.50	34	0.00	ns
Preparing follow-up activities	4.59	68	4.62	34	0.01	ns
Teaching with models	4.87	68	4.46	35	1.20	ns
Providing yourself with flat pict.	4.35	68	4.76	34	1.09	ns
Judging when to use a given mat.	4.47	68	4.66	35	0.31	ns
Using a recording	3.97	68	4.54	35	1.94	ns
Drawing on chalkboard	4.65	68	4.77	35	0.09	ns
Teaching with opaque projector	4.49	68	4.26	35	0.38	ns
Taking a field trip	4.22	68	4.15	34	0.03	ns
Tape recording materials for study	3.88	68	4.17	35	0.58	ns
Mounting pictures	3.67	67	4.23	35	2.42	ns
Using felt board materials	3.55	67	3.76	34	0.33	ns
Recognizing when a recording is useful	3.76	68	4.38	34	2.73	ns
Helping people use maps	3.78	68	3.49	35	0.55	ns
Locating needed pictures	3.67	67	4.57	35	4.78	.05
Using words	4.47	68	4.26	34	0.27	ns
Recommending classroom design for instruction	3.91	67	3.74	35	0.21	ns
Helping colleagues use materials	3.92	66	3.97	35	0.01	ns
Judging still pictures	3.52	67	4.17	35	3.51	ns
Learning from graphs	4.11	64	3.26	34	5.34	.05
Seeing educational TV programs	4.08	66	3.82	34	0.45	ns

TABLE 63. (Continued)

	Male		Female		F-Ratio	Significance
	X	n	X	n		
Keeping a study table in your classroom	3.31	68	3.71	35	1.01	ns
Storing instruction material	3.49	68	4.11	35	2.95	ns
Cleaning projector lenses	4.28	68	3.38	34	4.33	.05
Constructing overhead transparencies	4.06	67	3.37	35	2.39	ns
Explaining your program to your parents	3.74	68	3.50	34	0.29	ns
Changing projector lamps	4.31	68	3.14	35	7.17	.01
Constructing mock-ups	3.27	67	3.28	32	0.00	ns
Using puppets with students	2.21	68	3.18	34	6.35	.05

ns Not significant

A study was made of the influence of pattern of instruction and semester enrolled in the audiovisual course upon the rating of teachers of the "helpfulness" of certain items in the Course Effectiveness Inventory. Out of 96 possible comparisons, 17 or 18% proved to be significant in influencing the evaluation of certain items in the Inventory. There was no consistency among the seventeen differences, however, in terms of either semester or pattern of instruction. Thus it appears that the differences might be contributed as a consequence of error in measurement or by the idiosyncracies of the respondents. In any case, there is not enough evidence to support the influence of either semester or pattern of instruction as affecting the teacher's evaluation of the "helpfulness" of given items in the Course Effectiveness Inventory.

6.5 School and Classroom Data

The one area that remains in a consideration of the results of Phase Two is that which adds to our information about the schools visited and their policies which might have affected the use of audiovisual materials and equipment by the teachers who graduated from the experiment. Table 64 summarizes a number of self-explanatory facts about the "average" school and the "average" classroom involved in the follow-up. On the basis of the factual data about the schools and classrooms, it appears that the elementary classroom has a slight advantage in terms of work space and general display space. The budget for instructional materials, other than printed, and the percentage of rooms that can be darkened favors the secondary school. Apart from these comparisons, it appears that elementary and secondary schools are on somewhat of a par with each other.

6.51 Other Factors Affecting Use of Audiovisual Materials

It is generally assumed that the audiovisual program of a school may be improved by assigning responsibility for its coordination and its development to a school audiovisual coordinator or school system audiovisual supervisor. Questions were asked of the administrators concerning the presence of such people on the staff of the individual school or the school system. The results are as follows:

AV Coordinator	Frequency	Percentage
None	110	56.4
Full-time	0	0
½ time	12	6.2
¼ time	18	9.2
Less ¼ time	55	28.2
	195	100.0

AV Supervisor	Frequency	Percentage
None	141	72.3
Full-time	28	14.4
½ time	4	2.0
¼ time	5	2.6
Less ¼ time	17	8.7
	195	100.0

It is obvious from this information that there are few individuals in the schools and school systems charged with the responsibilities of an audiovisual coordinator. Whatever coordination did exist in the 195 schools

TABLE 64. Data on Schools and Classrooms

School Average

	Av. No. Pupils	Av. No. Teachers	Pupils per Teacher	Total Budget Instr. Mat.	Budget per Student	No. of rooms	% Rooms Darkened	No. half-day in-service AV per year	No. of Schools
Elementary	556	23	24	$ 521	$ .94	18	19	1.34	104
Secondary	1016	49	21	$1202	$1.18	37	34	.89	87

Classroom Average

	No. Seats	Sq. Ft. rooms	Shelf Space linear feet	Workspace square feet	Display Surface linear feet	Bulletin Board linear ft.	Chalkboard linear ft.	No. of classrooms
Elementary	30	779	35	143	19	18	22	123
Secondary	34	773	31	74	11	11	23	100

visited was carried on by persons with less than a one-quarter time responsibility. Considering the many activities of the teacher, experience shows that such a coordinator serves the principal function of ordering films and moving equipment.

Field trips are regarded as accepted means for enlarging the understanding of pupils by letting them observe phenomena and events on-location. Since the usual audiovisual course concerned itself in part with the techniques affecting the field trip, it was felt necessary to obtain information about the policies of the schools in this area. The assumption was that teachers may improve instruction through the use of field trips, but are generally restricted in their use. The information gathered during the interviews indicates that the majority of the schools did not restrict the number of field trips that a teacher might schedule. In discussing this policy, the administrator pointed out that, while the policy did not restrict the number of field trips, it was the responsibility of the teacher to support the need for a field trip with evidence of its applicability to the on-going activities of the class.

Field Trips	Frequency	Percentage
Not generally permitted	14	7.3
Special permission only	11	5.8
3 or less per year	41	21.5
4-6 per year	0	0
Not restricted	125	65.4
	191	100.0

GENERAL CONCLUSIONS AND RECOMMENDATIONS

This project at The Pennsylvania State University, involved four years of data gathering, from the Fall, 1959 to the end of Spring, 1963, for purposes of testing the effects of four patterns of instruction upon the performance of pre-service teachers to use audiovisual materials and equipment.

Phase One of the project covered the first two years and concerned itself primarily with comparing the performances among 1,000 students taught a basic audiovisual course by four patterns of instruction: Separate Course, Integration, Student Teaching, and Self Study. Measurement during Phase One was accomplished through the following test: Information, Pictorial, Laboratory Written, Laboratory Performance, and an Attitude Scale.

Phase Two of the project covered the last two years and concerned itself with over two hundred graduates from the project who were visited as they taught in one hundred and ninety six schools in Pennsylvania. The purposes of the follow-up were; one, to judge the effects of the four patterns of instruction upon the teaching performance of the teachers; two, to have the teachers evaluate on a personal basis the effectiveness of the pattern of instruction in which they had been enrolled in terms of its adequacy for preparing them to teach; and three, to determine the effect of the availability of audiovisual materials and equipment upon the teacher's use of those materials and equipment. Measurement during Phase Two was accomplished through the following instruments: School Description, Classroom Description, Class Visitation Check List, Open-end Interview, Course Opinionnaire, Course Effectiveness Inventory, and Frequency of Use Inventory.

In the analysis of the data, comparisons were made in Phase One between the patterns of instruction and the scores obtained on the various testing instruments. In Phase Two the major comparisons were made between the four independent variables (pattern of instruction, semester enrolled in the audiovisual course, elementary-secondary factor, and sex) and the scores on the various instruments developed for the follow-up.

One general result of Phase One was that all patterns of instruction resulted in significant mean gains on the various measures between the pre and post testing periods. Another general result was that there were no overall significant differences among the patterns which would lead to the conclusion that one pattern was superior to all other patterns on all measures. There were spot differences among the patterns at significant levels of probability. The overall rank order of performance among the patterns in terms of scores on the various measures in Phase One was: Separate Course, first; Integration, close second; Self Study, third; Student Teaching, fourth. In terms of the teaching of equipment operation, the Self Study pattern proved that this kind of perceptual -motor skill can be learned through the avenue of specially prepared materials without the presence of an instructor. In fact, the Self Study students did equally as well, if not better than all other groups in learning equipment operation.

In terms of attitudes towards the use of audiovisual materials and equipment in teaching, it appears that the environment and motivation of self instruction had a greater influence upon the students in the Self Study pattern than the other patterns. This positive attitude of the Self Study students persisted on the scores of the Course Opinionnaire used in Phase Two.

The general conclusion from Phase Two is that the only independent variable which seemed to persist in influencing the scores of the teachers on the follow-up instruments was the elementary-secondary factor. In other words, there seemed to be a direct relationship between the fact of being an elementary teacher and higher scores on the Frequency of Use Inventory. It also appears that those items which the elementary teacher reported using were also found in more abundance in the elementary classroom. There is some suspicion, however, that the kinds of items used by the elementary teachers with greater frequency than the secondary teachers may have been directly related to the kinds of activities carried on in an elementary classroom and to the greater abundance of these items in the elementary classroom.

In comparing the differences between elementary and secondary teachers in their use of audiovisual materials and equipment, it appears that the elementary teachers use the traditional bulletin boards, record players, exhibits, and flat pictures more frequently than the secondary teachers. From the reports of the secondary teachers it appears that they used more projected materials, such as motion pictures, filmstrips, opaque projection materials, and the overhead projectuals than did the elementary teachers. On the other hand, comparing frequency of use as reported by the teachers with the observations of the interviewers, there appears to be some discrepancy between the two. Less than ten percent of the 228 visits recorded the use of any projected material, with the greatest number of teachers using chalkboards and bulletin boards (85% and 61% respectively). All other materials on the Visitation Checklist were used by thirty-seven percent or less of the teachers.

Most of the equipment available to teachers was not placed in the classroom on any permanent arrangement. In fact, except for record players, easels, and felt boards in the elementary classrooms, over ninety percent of all the classrooms visited had virtually none of the traditional recording and projection equipment in the classroom on a permanent basis.

In broad terms, this experiment seems to indicate that in acquiring the information and skills associated with a basic audiovisual course, no one pattern of instruction made a significant difference, particularly with verbally sophisticated university students in the teacher education curriculums. The one exception was that equipment operation perhaps should be taught through self instruction. It appears also that even though this information and skill may persist into the teaching position, the teachers on the whole did not take advantage of the materials and equipment in the schools, as evidenced by their own responses and the visits of the interviewers. There may be a relationship between what is available in the classroom on a permanent basis and the extent of use by the teacher. This seemed to be indicated in the greater use by the elementary teachers of those items which they had in greater abundance than did the secondary teachers. This does not prove, however, that the elementary teachers used a wider range of materials and equipment.

On the basis of what the evidence indicates and the judgments of the project interviewers, it appears that the whole area of teacher attitudes toward the use of audiovisual materials in the teaching-learning process needs to be explored more fully. By and large, the interviewers were not satisfied that the graduates from the experiment were exploring and utilizing the full potentials of the wide range of audiovisual materials and equipment available.

Perhaps a fruitful direction in teacher preparation would be to systematically explore various types of arrangements and experiences necessary to influence the attitudes of pre-service teachers as they consider the role of audiovisual materials in the teaching-learning process. Perhaps more self direction and more depth in the actual utilization of audiovisual materials in all of the courses in teacher preparation may be the answer. It appears significant that the teachers who had been prepared in the Self Study context had the highest Opinionnaire, Classroom Description, and Class Visitation scores. These scores reflected greater use and a more positive attitude than for the teachers who had been prepared through the other patterns.

Since factual information and operational skills relative to the audiovisual area can be acquired by most pre-service teachers through sophisticated self instructional materials, it would appear important, as a next step, to explore the area of the pre-service teacher's conceptualization of the role the teacher plays in the process of communication called teaching, and the contributions to that process that may be borne by various types of audiovisual materials independently, or with the support of the teacher. The evidence from this experiment seems to suggest that the process of self discovery and personal involvement in determining the merits of audiovisual materials in teaching and learning may develop the attitudes which will result in the greater utilization on the teaching job.

IV. APPENDIX

1. Course Outline: Phase One
2. Films and Filmstrips Used in Course
3. Assignment Sheet - Integration Secondary
4. Tables - Statistical Data
5. Evaluative Instruments: Phase One
6. Follow-up Instruments: Phase Two
7. Names of Teaching Locations
8. Map of Teaching Locations
9. Photographs and Charts Related to Self Study

COURSE OUTLINE: PHASE ONE
ED. SERV. 435

PRECEDING PAGE BLANK-NOT FILMED

Week		**Reading Lecture Discussion**	**Laboratory Sequence**
1	PRE TESTING		
2	UNIT I		
	1. Assignments-Text-Grading	*V-Ch. 1,3,4	Principles of Projection
	2. Five communication factors	D-pp. 1-71	1. Charts on Diascopic and Episcopic
	3. Hand outs: source list	K-pp. 1-32	
		H-pp. 1-18	2. Practice on projectors
3	UNIT II		
	1. Theory of Communications	V-Ch. 1,3,4	Van-Ch. 6
	2. Classification of Materials	D-pp. 1-71	Filmstrip - 2 x 2 Slide
		K-pp. 1-32	Practice slides and filmstrips
		H-pp. 1-18	
4	UNIT III GRAPHICS-Channels		
	1. Chalkboard	V-Ch. 2,5,7	Overhead Projector
	2. Feltboard	D-pp. 308-344	Plastic Sheets
	3. Bulletin Board--Posters	K-pp. 344-377	1. Felt tip pens
		H-pp. 235-263	2. Ceramic pencils
5	UNIT IV GRAPHICS-Media		
	1. Maps	V-Ch. 2,5,7	Opaque Projector
	2. Charts	D-pp. 308-344	
	3. Graphs	K-pp. 378-406	
	4. Diagrams	H-pp. 333-350	
	5. Cartoons		
6	UNIV V STILL PICTURES-Flat		
	1. Passing	V-Ch. 2,5,7	Tape Recorders
	2. Holding	D-pp. 243-277	1. Charts
	3. Opaque	K-pp. 50-75	2. Tapes
	4. Browsing	H-pp. 405-440	
	5. Posting		
7	UNIT VI STILL PICTURES-Transparent		
	1. Slides, 2 x 2 and 3¼ x 4	V-Ch. 2,5,7	Tape Recorders
	2. Overlays and lrg. transparencies	D-pp. 243-277	1. Wollensak
	3. Lift-off	K-pp. 76-154	2. VM
	4. Operative slides	H-pp. 441-468	3. Webcor
	ASSIGN: 3¼ x 4 slide to be produced at home--provide slide making materials		
	5. Polaroid Process		

COURSE OUTLINE: PHASE ONE (continued)

Week			
8	UNIT VII		
	MID-SEMESTER TEST	V-Ch. 2,5,7	Motion Picture Projector
	FILMSTRIPS	D-pp. 243-277	1. RCA
		K-pp. 99-132	
		H-pp. 138-156	
9-11	UNITS VIII & IX MOTION PICTURES		
	1. Characteristics	V-Ch. 2,5,7	Motion Picture Projector
	2. Types	D-pp. 213-242	1. Bell & Howell
	3. Utilization	K-pp. 155-246	2. Victor
	a. Concept	H-pp. 157-182	
	b. Skill		
	c. Attitude		
	4. Sources		
12	UNIT X TELEVISION		
	1. How it works	V-Ch. 2,5,7	Motion Picture Practice
	channel?	D-pp. 197-212	
	2. Function as a	K-pp. 303-343	
	mass medium?	H-pp. 206-234	
	3. E.T.V.		
13	UNIT XI FIELD TRIP		
	1. Types	V-Ch. 2,5,7	Motion Picture Practice
	2. Procedures	D-pp. 156-172	
	3. Values	K-pp. 479-499	
		H-pp. 351-380	
14	UNITS XII & XIII DRAMA-DEMONSTRATION		
	1. School Plays	V-Ch. 2,5,7	Motion Picture Practice
	2. Puppets and Marionettes	D-pp. 123-155	
	3. Role Playing, Sociodrama	K-pp. 173-196	
	a. Criteria	pp. 500-517	
	4. Use of Realia	H-pp. 283-315	
15	UNITS XIV & XV RADIO-RECORDINGS		
	1. Educational Radio in U.S.	V-Ch. 2,5,7	Motion Picture Practice
	2. Types of Broadcasts	D-pp. 278-307	
	3. Use of Recordings	K-pp. 247-302	
		H-pp. 183-205	
		pp. 316-332	
16	REVIEW		PERFORMANCE TEST

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* V = Vander Meer (multilith); D=Dale; K = Kinder; H = Harcleroad

FILMS AND FILMSTRIPS USED IN COURSE

(Available to the Self Study Pattern and for use by instructors in other patterns with the exception of those items marked with an asterisk)

16mm Motion Pictures

- BULLETIN BOARDS: AN EFFECTIVE TEACHING DEVICE
- CHALK AND CHALKBOARDS
- CHILDREN LEARNING BY EXPERIENCE
- CHILDREN MUST LEARN
- *CLASSIFICATION OF MATERIALS - kinéscope
- *COMMUNICATION - kinéscope
- *DEMONSTRATIONS - kinéscope
- FACTS ABOUT FILMS
- FIELD TRIP
- FLANNEL BOARDS AND HOW TO USE THEM
- *FLAT PICTURES - kinéscope
- GE METER WITH A MEMORY
- HANDMADE LANTERN SLIDES
- LEARNING IS SEARCHING
- LET'S TALK ABOUT FILMS
- MAKING FILMS THAT TEACH
- MAPS ARE FUN
- OPERATION AND CARE OF THE BELL & HOWELL
- RIVER, THE
- *ROLE PLAYING - kinéscope
- SCHOOL SHOP PLANNING
- SOUND AND THE STORY, THE
- SOUND RECORDING AND REPRODUCTION
- STORY OF TELEVISION
- UNIQUE CONTRIBUTION, THE
- USING THE CLASSROOM FILE
- WORLD OF THE CAMERA, THE

35mm Filmstrips

- A SIMPLE EXHIBIT TECHNIQUE
- A TEACHER UTILIZES A MOTION PICTURE FILM
- ACHIEVING CLASSROOM DISCIPLINE
- ALGEBRA SERIES: GRAPHS
- BULLETIN BOARDS AT WORK
- CENTURY OF PROGRESS: PHOTOGRAPHY
- COLLEGE AV CENTER, THE
- COMMUNICATION
- COUNTY AV SERVICE, THE
- CUTHBERT'S LAST STAND
- DEMONSTRATION AS A TEACHING TECHNIQUE, THE
- DIORAMA AS A TEACHING AID, THE
- DRAWING TO SCALE
- EFFECTIVENESS OF AUDIO-VISUAL MATERIALS
- ELEMENTS OF A MAP
- EXAMPLE OF A TEACHING MACHINES PROGRAM
- FILMSTRIPS FOR TODAY'S CURRICULUM
- FLAT MAPS ON A ROUND GLOBE
- FOR TEACHERS ONLY
- GLOBE, THE
- HANDMADE LANTERN SLIDES
- HISTORY OF COMMUNICATIONS
- HOW WE USE GRAPHS
- HOW PUPILS AND TEACHERS PLAN TOGETHER
- HOW TO KEEP YOUR BULLETIN BOARDS ALIVE
- HOW TO MAKE RELIEF MAPS
- HOW TO ORGANIZE A FIELD TRIP
- HOW TO USE A TEACHING FILM
- IMPROVING THE USE OF THE CHALKBOARD
- MAKING A BAR GRAPH
- MAKING A CIRCLE GRAPH
- MAKING A LINE GRAPH
- MAKING EFFECTIVE TEACHING
- MAKING FIELD TRIPS EFFECTIVE
- MAKING GEOGRAPHIC MODELS
- MAKING MARIONETTES AND PUPPETS
- MAKING YOUR CHALK TEACH
- MAN LEARNS TO COMMUNICATE
- MAPS FOR SPECIAL PURPOSES
- MAPS FOR THE AIR AGE
- MAPS OF PHYSICAL FEATURES
- MAPS THROUGH THE AGES
- MOTION PICTURES
- MOUNTING PICTURES
- MUSEUM IS A STORY, THE
- OPAQUE PROJECTOR, THE
- OPERATION OF THE TAPE RECORDER
- SIMPLE SILK SCREEN TEACHING PARTS I & II
- SPECIMEN IN LIQUID PLASTICS
- STUDY PICTURES AND LEARNING
- SUCCESSFUL EXHIBIT IDEAS
- TEACHING BY TELEVISION
- TEACHING MACHINES
- TEACHING WITH A FILMSTRIP
- TEACHING WITH STILL PICTURES
- USING CHARTS AND GRAPHS IN TEACHING
- USING COMMON MAPS
- WHAT A MAP IS
- WHAT AND WHY OF AUDIO-VISUAL ED.
- WHAT IS A GRAPH?
- WHAT IS A GRAPH? PICTURE GRAPH

ASSIGNMENT SHEET - EXAMPLE INCORPORATION OF MEDIA

Integration-Secondary

Sec. Ed. 252 - Ed. Ser. 435 - Spring 1961

GROUP PRESENTATIONS

1. Each of the four subject area groups (social studies, math, science, English) will make a presentation to the class to be completed within three class hours (150 minutes).

2. The following criteria must be met in each presentation.

    a. Each group will teach three lessons from their subject areas within the three periods. Allow time for critique.

    b. Among the three lessons, one will demonstrate how to teach a skill, another an understanding (concept), and a third, an attitude.

    c. Each lesson should emphasize - almost to the point of exaggeration - the use of a variety of teaching media, i.e., charts, graphs, still pictures, motion pictures, role playing, panel, questioning, etc.

    d. The use of materials in each lesson will be evaluated in terms of applicability to subject matter, to group, to learning objective and to inherent potentials of a given medium to accomplish the above.

    e. A lesson plan for each lesson must be approved well in advance of presentation. This lesson plan should include:

        1. objectives

        2. content outline

        3. teaching materials and techniques

        4. estimated time for each part of the presentation.

3. Rating sheets will be issued for the class to rate each presentation.

INFORMATION MEAN GAIN - t's; PHASE ONE

		Sep C	Int S	Int E	STNS	STNE	STSS	STSE
Sep C	S60							
	F60							
	S61							
Int S	S60	0.95						
x	F60	2.83 ←+						
	S61	0.26						
Int E	S60	0.95						
x	F60	0.34	2.34 ↑+					
	S61	1.18	1.086					
STNS	S60	0.05	0.48	0.48				
xx	F60	6.60 ↑+	7.34 ↑+	3.86 ↑+				
	S61	6.98 ↑+	4.71 ↑+	3.64 ↑+				
STNE	S60	0.05	0.48	0.48				
xx	F60	2.60 ↑+	4.13 ↑+	1.74	1.74			
	S61	0.64	0.70	0.26	3.34 ←+			
STSS	S60	2.75 ↑+	2.99 ↑+	2.99 ↑+	1.62	1.62		
xxx	F60	3.04 ↑+	4.24 ↑+	2.41 ↑+	0.01	1.00		
	S61	4.88 ↑+	3.85 ↑+	2.87 ↑+	0.29	2.76 ↑+		
STSE	S60	2.75 ↑+	2.99 ↑+	2.99 ↑+	1.62	1.62		
xxx	F60	0.24	2.55 ↑+	0.01	5.05 ←+	2.15 ←+	2.74 ←+	
	S61	2.72 ↑+	2.36 ↑+	1.42	1.54	1.51	1.14	
Self Study	S60	2.75 ↑+	2.98 ↑+	2.98 ↑+	1.65	1.65	0.00	0.00
	F60	1.61	3.38 ↑+	0.91	3.01 ←+	0.92	1.78	1.23
	S61	2.84	2.32 ↑+	1.28	2.17 ←+	1.38	1.60	0.29

x	Integration - combined scores - Spring 1960
xx	Student Teaching Non-Saturated - combined scores - Spring 1960
xxx	Student Teaching Saturated - combined scores - Spring 1960
+	Significance at 5% or better in favor of arrow direction

ATTITUDE MEAN GAIN - t's: PHASE ONE

		Sep C	Int S	Int E	STNS	STNE	STSS	STSE
Sep C	S60							
	F60							
	S61							
Int S	S60	1.34						
x	F60	0.58						
	S61	0.22						
Int E	S60	1.34						
x	F60	0.82	0.57					
	S61	0.73	0.37					
STNS	S60	1.26	0.57	0.57				
xx	F60	0.06	0.08	0.28				
	S61	1.32	1.22	1.58				
STNE	S60	1.26	0.57	0.57				
xx	F60	0.40	0.37	0.05	0.20			
	S61	0.14	0.29	0.64	0.85			
STSS	S60	0.80	0.22	0.22	0.67	0.67		
xxx	F60	0.29	0.25	0.33	0.09	0.18		
	S61	0.30	0.42	0.77	0.71	0.12		
STSE	S60	0.80	0.22	0.22	0.67	0.67		
xxx	F60	0.16	0.08	0.64	0.14	0.43	0.33	
	S61	1.25	1.11	1.51	0.23	0.71	0.56	
Self	S60	0.93	0.39	0.39	0.78	0.78	0.08	0.08
Study	F60	0.29	0.21	0.87	0.18	0.52	0.45	0.04
	S61	0.09	0.14	0.55	1.17	0.18	0.32	1.05

x Integration - combined scores - Spring 1960
xx Student Teaching Non-Saturated - combined scores - Spring 1960
xxx Student Teaching Saturated - combined scores - Spring 1960

PICTURE MEAN GAIN - t's: PHASE ONE

		Sep C	Int S	Int E	STNS	STNE	STSS	STSE
Sep C	S60							
	F60							
	S61							
Int S	S60	3.46 ↑+						
x	F60	3.94 ↑+						
	S61	0.97						
Int E	S60	3.46 ↑+						
x	F60	5.45 ↑+	0.49					
	S61	0.21	0.45					
STNS	S60	2.55 ↑+	0.66	0.66				
xx	F60	3.36 ↑+	2.50 ↑+	2.12 ↑+				
	S61	7.83 ↑+	5.53 ↑+	4.95 ↑+				
STNE	S60	2.55 ↑+	0.66	0.66				
xx	F60	1.70	0.67	0.22	1.84			
	S61	1.16	0.46	0.77	3.67 ←+			
STSS	S60	1.07	0.66	0.66	1.01	1.01		
xxx	F60	2.96 ↑+	2.12 ↑+	1.74	0.32	1.48		
	S61	3.16 ↑+	2.11 ↑+	2.21 ↑+	2.46 ←+	1.29		
STSE	S60	1.07	0.66	0.66	1.01	1.01		
xxx	F60	4.25 ↑+	2.66 ↑+	2.07 ↑+	0.62	1.65	0.25	
	S61	0.49	0.12	0.25	4.14 ←+	0.47	1.77	
Self	S60	4.80 ↑+	1.37	1.37	0.22	0.22	1.48	1.48
Study	F60	1.48	0.18	0.33	2.40 ←+	0.52	2.01	2.51 ←+
	S61	0.87	0.06	0.46	4.82 ←+	0.38	1.88	0.15

x Integration - combined scores - Spring 1960
xx Student Teaching Non-Saturated - combined scores - Spring 1960
xxx Student Teaching Saturated - combined scores - Spring 1960
+ Significance at 5% or better in favor of arrow direction

LAB WRITTEN MEAN GAIN - t's: PHASE ONE

		Sep C	Int S	Int E	STNS	STNE	STSS	STSE
Sep C	S60							
	F60							
	S61							
Int S	S60	0.45						
x	F60	0.71						
	S61	0.84						
Int E	S60	0.45						
x	F60	0.23	0.71					
	S61	0.96	0.20					
STNS	S60	3.89 ↑	3.16 ↑	3.16 ↑				
xx	F60	1.05	0.45	1.03				
	S61	9.52 ↑	6.85 ↑	6.01 ↑				
STNE	S60	3.89 ↑	3.16 ↑	3.16 ↑				
xx	F60	5.09 ↑	4.22 ↑	4.82 ↑	3.09 ↑			
	S61	8.65 ↑	6.16 ↑	5.38 ↑	0.70			
STSS	S60	1.40	1.40	1.40				
xxx	F60	8.26 ↑	5.54 ↑	6.14 ↑	4.02 ↑	0.89		
	S61	3.88 ↑	2.72 ↑	2.34 ↑	3.21 ←	2.60 ←		
STSE	S60	1.41	1.40	1.40	1.85	1.85		
xxx	F60	1.52	0.69	1.35	0.15	3.36 ←	4.52 ←	
	S61	4.25 ↑	2.82 ↑	2.38 ↑	3.68 ←	3.02 ←	0.15	
Self Study	S60	0.07	0.45	0.45	3.24 ←	3.24 ←	1.19	1.19
	F60	1.00	0.26	0.95	0.22	3.84 ←	5.07 ←	0.42
	S61	1.20	0.18	0.05	7.16 ←	6.43 ←	2.71 ←	2.83 ←

x	Integration - combined scores - Spring 1960
xx	Student Teaching Non-Saturated - combined scores - Spring 1960
xxx	Student Teaching Saturated - combined scores - Spring 1960
+	Significance at 5% or better in favor of arrow direction

SUMMARY: PHASE ONE - MEAN GAINS AND STANDARD DEVIATIONS

Information mean gain summary

	Spring 1960		Fall 1960		Spring 1961	
	M.	S.D.	M.	S.D.	M.	S.D.
Sep. Course	7.68	4.70	9.44	5.46	10.40	5.45
Sec. Integr.	8.13	5.30	12.14	5.20	10.68	6.19
Elem. Integr.			9.04	5.27	9.17	4.44
St. Tchg. S.S.	4.78	4.33	4.00	2.23	5.33	4.24
St. Tchg. S.E.			9.23	3.55	7.04	5.56
St. Tchg. N.S.	7.77	5.48	4.25	5.73	5.00	2.67
St. Tchg. N.E.			6.31	4.50	9.58	6.05
Self Study	5.09	5.48	7.69	5.93	7.47	6.50
TOTAL	7.04	5.12	8.99	5.57	9.12	5.81
	50-item test		60-item test		60-item test	

Attitude gain summary

	Spring 1960		Fall 1960		Spring 1961	
	M.	S.D.	M.	S.D.	M.	S.D.
Sep. Course	2.68	4.87	2.29	5.29	2.93	5.63
Sec. Integr.	2.72	5.14	2.22	6.58	3.21	6.04
Elem. Integr.			2.96	3.37	3.74	4.76
St. Tchg. S.S.	2.41	5.87	2.58	3.20	2.57	5.04
St. Tchg. S.E.			2.09	5.44	1.79	3.84
St. Tchg. N.S.	3.69	6.98	2.40	5.95	1.50	4.09
St. Tchg. N.E.			2.88	5.69	2.77	5.59
Self Study	2.29	4.54	2.03	4.77	3.02	5.85
TOTAL	2.66	5.16	2.33	5.29	2.85	5.47

Picture gain summary

	Spring 1960		Fall 1960		Spring 1961	
	M.	S.D.	M.	S.D.	M.	S.D.
Sep. Course	3.39	2.16	6.37	3.14	4.10	2.12
Sec. Integr.	2.24	1.88	5.63	3.37	3.76	1.84
Elem. Integr.			5.22	2.98	4.00	2.02
St. Tchg. S.S.	2.61	2.79	3.00	3.85	2.67	1.89
St. Tchg. S.E.			3.32	2.33	3.83	2.43
St. Tchg. N.S.	1.77	2.33	2.50	3.56	1.39	1.25
St. Tchg. N.E.			5.00	3.06	3.50	2.44
Self Study	1.66	2.10	5.49	3.19	3.73	2.63
TOTAL	2.72	2.30	5.57	3.35	3.73	2.25
	15-item test		30-item test		15-item test	

Laboratory written gain summary

	Spring 1960		Fall 1960		Spring 1961	
	M.	S.D.	M.	S.D.	M.	S.D.
Sep. Course	13.94	4.43	14.36	4.78	16.68	4.65
Sec. Integr.	14.44	6.01	13.68	5.38	15.95	4.82
Elem. Integr.			14.59	4.34	15.70	4.49
St. Tchg. S.S.	12.52	4.35	7.10	2.51	12.38	4.67
St. Tchg. S.E.			12.77	4.56	12.58	4.28
St. Tchg. N.S.	10.23	3.04	13.00	3.90	8.11	3.40
St. Tchg. N.E.			8.20	3.67	8.92	4.09
Self Study	13.88	3.97	13.34	5.07	15.76	4.70
TOTAL	13.61	5.40	13.50	5.04	14.92	5.29

Laboratory performance

	Spring 1960		Fall 1960		Spring 1961	
	M.	S.D.	M.	S.D.	M.	S.D.
Sep. Course	56.80	5.73	34.59	4.62	36.58	3.61
Sec. Integr.	54.90	5.94	33.05	6.28	36.82	4.23
Elem. Integr.			36.43	3.44	34.91	4.07
Self Study	57.81	4.42	35.47	4.67	37.57	3.12
TOTAL	56.58	5.65	34.65	4.84	36.65	3.72
	Original Test		Revised Test		Revised Test	

SUMMARY: PHASE ONE - PRE-POST MEANS AND STANDARD DEVIATIONS

	INFORMATION (Spring 1960, 50 item)						ATTITUDE						PICTURE					
	PRE			POST			PRE			POST			PRE			POST		
	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N
S60	23.60	4.88	208	30.59	4.90	207	18.71	5.66	208	21.43	5.30	207	7.41	1.94	205	10.13	1.85	209
F60	28.18	4.76	319	37.16	5.25	323	19.25	4.79	319	21.60	4.64	323	(30 item) 17.53	3.38	319	23.07	3.01	323
S61	27.07	5.30	364	36.20	5.03	364	18.82	5.03	364	21.69	4.89	364	6.59	2.04	364	10.33	2.10	364

	LAB WRITTEN						LAB PERFORMANCE			MECH. COMP.						CUM. AVG.		
	PRE			POST			POST			PRE			POST			PRE		
	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N	Mn	SD	N
S60	6.98	4.59	202	20.80	4.95	207	56.73	13.40	209	33.27	8.51	209				2.53	.468	208
F60	6.98	4.62	305	20.34	4.25	323	34.65	4.84	246							2.49	4.34	323
S61	4.38	4.19	364	19.33	4.40	364	36.65	3.72	273	32.17	8.55	364	34.18	7.84	364	2.55	4.86	364

INFORMATION POST t's BETWEEN GROUPS: PHASE ONE

		Sep C	Int S	Int E	STNS	STNE	STSS	STSE
Sep C	S60							
	F60							
	S61							
Int S	S60	1.91						
x	F60	3.55 ←						
	S61	0.90						
Int E	S60	1.91						
	F60	2.04 ←	1.23					
	S61	0.74	0.05					
STNS	S60	2.44 ↕	3.48 ↕	3.48 ↕				
xx	F60	2.34 ↕	4.00 ↕	3.21 ↕				
	S61	1.27	1.70	1.56				
STNE	S60	2.44 ↕	3.48 ↕	3.48 ↕				
xx	F60	0.61	3.39 ↕	2.15 ↕	1.87			
	S61	1.55	1.97	1.79	0.15			
STSS	S60	1.38	2.50 ↕	2.50 ↕	.80	.80		
xxx	F60	1.61	3.57 ↕	2.66 ↕	0.78	1.10		
	S61	2.81 ↕	3.14 ↕	2.75 ↕	0.84	0.70		
STSE	S60	1.38	2.50 ↕	2.50 ↕	0.80	0.80		
xxx	F60	2.43 ←	0.69	0.47	3.44 ←	2.50 ←	2.92 ←	
	S61	1.39	1.86	1.65	0.09	0.27	1.06	
Self Study	S60	0.96	2.01	2.01	0.97	0.97	0.22	0.22
	F60	2.33 ↕	4.40 ↕	3.38 ↕	0.57	1.63	0.30	3.63 ↕
	S61	2.26 ↕	2.63 ↕	2.37 ↕	0.68	0.54	0.11	0.85

x Integration - combined scores - Spring 1960
xx Student Teaching Non-Saturated - combined scores - Spring 1960
xxx Student Teaching Saturated - combined scores - Spring 1960
+ Significance at 5% or better in favor of arrow direction

ATTITUDE POST t's BETWEEN GROUPS: PHASE ONE

		Sep C	Int S	Int E	STNS	STNE	STSS	STSE
Sep C	S60							
	F60							
	S61							
Int S	S60	1.89						
x	F60	0.26						
	S61	0.23						
Int E	S60	1.89						
x	F60	0.22	1.88					
	S61	0.43	0.14					
STNS	S60	0.56	1.69	1.69				
xx	F60	0.75	0.82	0.37				
	S61	1.06	1.04	1.18				
STNE	S60	0.56	1.69	1.69				
xx	F60	1.47	1.39	0.45	0.08			
	S61	1.28	1.17	1.35	0.02			
STSS	S60	0.42	1.67	1.67	0.13	0.13		
xxx	F60	0.52	0.21	1.98	0.94	1.52		
	S61	0.09	0.08	0.20	0.89	0.98		
STSE	S60	0.42	1.67	1.67	0.13	0.13		
xxx	F60	1.40	1.20	0.87	1.31	0.35	1.35	
	S61	0.08	0.23	0.38	0.85	0.95	0.13	
Self	S60	1.11	0.57	1.57	1.25	1.25	1.14	1.14
Study	F60	0.27	0.43	1.43	0.54	0.96	0.62	0.72
	S61	0.84	0.41	0.29	1.44	1.66	0.45	0.67

x Integration - combined scores - Spring 1960
xx Student Teaching Non-Saturated - combined scores - Spring 1960
xxx Student Teaching Saturated - combined scores - Spring 1960

PICTURE POST t's BETWEEN GROUPS: PHASE ONE

		Sep C	Int S	Int E	STNS	STNE	STSS	STSE
Sep C	S60							
	F60							
	S61							
Int S	S60	1.94						
x	F60	0.08						
	S61	1.01						
Int E	S60	1.94						
	F60	1.22	1.05					
	S61	1.23	0.30					
STNS	S60	1.90	0.71	0.71				
xx	F60	4.92 ↑+	4.39 ↑+	3.32 ↑+				
	S61	3.22 ↑+	2.11 ↑+	1.72				
STNE	S60	1.90	0.71	0.71				
xx	F60	0.43	0.38	0.72	4.16 ←+			
	S61	0.74	0.33	0.62	2.52 ←+			
STSS	S60	2.05 ↑+	0.72	0.72	0.08	0.08		
xxx	F60	6.67 ↑+	4.72 ↑+	2.98 ↑+	1.37	4.40 ↑+		
	S61	2.23 ↑+	1.31	0.99	0.64	1.65		
STSE	S60	2.05 ↑+	0.72	0.72	0.08	0.08		
xxx	F60	2.24 ↑+	1.56	0.18	3.64 ←+	1.16	3.30 ←+	
	S61	0.41	0.44	0.70	2.45 ←+	0.16	1.65	
Self Study	S60	2.62 ↑+	0.51	0.51	0.40	0.40	0.36	0.36
	F60	2.68 ↑+	1.93	0.55	3.28 ←+	1.55	3.14 ←+	0.51
	S61	1.32	0.19	0.13	2.00 ←+	0.57	1.18	0.64

x Integration - combined scores - Spring 1960
xx Student Teaching Non-Saturated - combined scores - Spring 1960
xxx Student Teaching Saturated - combined scores - Spring 1960
+ Significance at 5% or better in favor of arrow direction

LAB WRITTEN POST t's BETWEEN GROUPS: PHASE ONE

		Sep C	Int S	Int E	STNS	STNE	STSS	STSE
Sep C	S60							
	F60							
	S61							
Int S	S60	1.34						
x	F60	2.54 ↔						
	S61	1.17						
Int E	S60	1.34						
	F60	0.56	2.09 ↕					
	S61	2.62 ↕	3.02 ↕					
STNS	S60	3.07 ↕	3.38 ↕	3.38 ↕				
xx	F60	5.09 ↕	5.93 ↕	4.11 ↕				
	S61	5.44 ↕	5.52 ↕	2.51 ↕				
STNE	S60	3.07 ↕	3.38 ↕	3.38 ↕				
xx	F60	5.64 ↕	6.59 ↕	4.09 ↕	0.78			
	S61	10.81 ↕	9.48 ↕	4.92 ↕	1.64			
STSS	S60	0.39	1.36	1.36	2.24 ↔	2.24 ↔		
xxx	F60	3.72 ↕	4.83 ↕	2.56 ↕	1.96	1.44		
	S61	4.20 ↕	4.36 ↕	1.10	1.55	3.80 ↔		
STSE	S60	0.39	1.36	1.36	2.24 ↔	2.24 ↔		
xx	F60	1.36	2.84 ↕	0.59	3.72	3.60 ↔	2.05 ↔	
	S61	2.78 ↕	3.16 ↕	0.26	2.18 ↔	4.37 ↔	0.78	
Self Study	S60	0.79	0.72	0.72	3.31 ↔	3.31 ↔	0.91	0.91
	F60	0.85	2.45 ↕	0.18	4.08 ↔	4.07 ↔	2.48 ↔	0.43
	S61	0.44	1.21	1.78	4.28 ↔	7.43 ↔	3.00 ↔	1.98

x Integration - combined scores - Spring 1960
xx Student Teaching Non-Saturated - combined scores - Spring 1960
xxx Student Teaching Saturated - combined scores - Spring 1960
+ Significance at 5% or better in favor of arrow direction

LAB PERFORMANCE POST t's BETWEEN GROUPS: PHASE ONE

		Sep C	Int S	Int E	STNS	STNE	STSS	STSE
Sep C	S60							
	F60							
	S61							
Int S	S60	1.72						
	F60	1.47						
	S61	0.32						
Int E	S60	1.72						
	F60	? 2.44 ←	? 2.71 →					
	S61	1.82	1.71					
STNS	S60							
	F60							
	S61							
STNE	S60							
	F60							
	S61							
STSS	S60							
	F60							
	S61							
STSE	S60							
	F60							
	S61							
Self Study	S60	1.03	x 2.35 →	x 2.35 →				
	F60	1.05	1.87	0.89				
	S61	1.87	0.92	2.72 →				

x Integration - combined scores - Spring 1960
? Question validity - number small (23) compared with total -
Sep C. N 151
Int S. N 38

→ Significance at 5% or better in favor of arrow direction

EVALUATIVE INSTRUMENTS - PHASE ONE

1. Information Test

SELECT THE BEST ANSWER

1. When a teacher's task is to give students an understanding of life during remote times, her greatest chance for success lies in:
    1. discussing with pupils appropriate names, places and events.
    2. developing pupil's abilities to paraphrase verbal materials.
    3. selecting suitable materials to lend a sense of reality to the time studied.
    4. providing materials so realistic that they will stimulate verbalism.

2. To build concepts from audiovisual materials requires ultimately:
    1. the simple differentiation among experiences.
    2. the integration of contributing experiences.
    3. the exposure to many materials.
    4. the cultivation of objective observations.

3. Audiovisual materials and methods to be used in shaping attitudes are more likely to be effective if they:
    1. require immediate overt response on the part of the learner.
    2. are designed to avoid the strongly controversial elements.
    3. are composed of the more abstract means of communication.
    4. contain an appeal which promotes personal involvement.

4. Which would be best to develop the sight recognition of highway signs?
    1. A dramatic motion picture on traffic regulations.
    2. Draw signs on chalkboard and explain meaning.
    3. Show signs on flash cards in front of class.
    4. Show pictures of signs with names below.

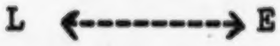
5. Among fourth grades, which will best serve to develop a comprehensive understanding of the U. S. Postal Service?
    1. A scheduled visit to the classroom by a postmaster.
    2. A conducted tour of the local Post Office.
    3. A series of flat pictures describing all facets of the U. S. Postal Service.
    4. A motion picture describing all facets of the U. S. Postal Service.

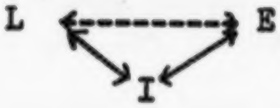
6. Which technique will teach a physical skill best?
    1. Extended practice by the pupil.
    2. A series of related pictures showing steps in the process.
    3. A live demonstration by an expert.
    4. A motion picture with suitable photographic techniques and commentary.

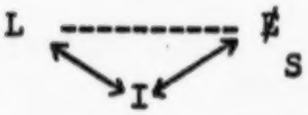
7. Which would be best for developing skill in analyzing data?
    1. A recorded discussion on the subject.
    2. A motion picture about the subject.
    3. A series of statistical tables.
    4. A series of graphs.

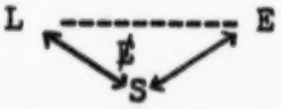
8. Sometimes an act of communication stimulates another act of communication in which the receiver becomes the sender. This is called:
    1. dynamics of learning.
    2. feed-back.
    3. transmission.
    4. curricular articulation.

9. In teaching, the communication system is usually:

1. 

2. 

3. 

4. 

L - Learner
E - Environment
I - Intermediary or Intercessor (such as teacher)
S - Substitute or symbol

10. Which offers the greatest possibility of a student's acquiring an understanding of the concept "loneliness"?
    1. Clinical case study of loneliness.
    2. A role playing situation depicting loneliness.
    3. Still pictures showing a variety of situations where people feel alone.
    4. A field trip to a mental institution where some of the patients are afflicted with the sense of loneliness.

11. Your purpose is to develop in students the ability simply to recognize the Morse Code. Which procedure may be most effective for developing this recognition.
    1. Requiring the students to analyze the meaning of the signal.
    2. Forcing learning by fixing an arbitrary time limit for recognition.
    3. Showing the use of code in various situations.
    4. Requiring the learner to repeat his reception of these signals.

12. Possibly the greatest benefit from role playing is:
    1. the rapport it helps establish in a group of students.
    2. the interest it stimulates in discussion among participants.
    3. the opportunity it provides for dramatizing problem situations.
    4. the protection it provides learners while real feelings are exposed.

13. Items such as objects and specimens differ from symbolic media in that real objects:
    1. nearly always involve several senses.
    2. generally are highly appealing.
    3. generally clarify ideas more easily.
    4. are more frequently visual in nature.

14. Among the skills a teacher attempts to develop in students is the ability to construct relationships. Which of the following by its very nature would most consistently provide experience in this area?
    1. A bulletin board display.
    2. A recorded discussion.
    3. A diorama.
    4. A line graph.

15. The teaching problem involved in using a feltboard lies in:
    1. the symbolic nature of most feltboard materials.
    2. its potentialities for student participation.
    3. color preference among children.
    4. its flexibility in use.

16. Select the graph most appropriate for presenting the following data:

    Distribution of families by income.

    Under $1000 - 10%
    $1000-$1999 - 17%
    $2000-$2999 - 26%
    $3000-$3999 - 20%
    $4000-$4999 - 10%
    $5000-$6999 - 9%
    $7500 and over 7%
    Not Known 1%

    Types of graphs
    1. Circle
    2. Histograph
    3. Bar
    4. Line

17. To show comparison of class sizes in three high schools, use a:
    1. circle graph
    2. line graph
    3. bar graph
    4. formula graph

18. The ultimate goal in having student committees develop bulletin board displays is that they:
    1. become more sensitive to color combinations.
    2. learn different ways to communicate.
    3. become more artistically inclined.
    4. develop flexibility in accepting differing points of view.

19. Good practice in the organization and administration of a "museum corner" in the classroom is to:
    1. display unrelated items to encourage imaginative thinking.
    2. permit handling of items to provide multi-sensory experience.
    3. change displays once a month.
    4. two of the above choices are correct.

20. The value of flat pictures in teaching lies in:
    1. the static nature of picture content.
    2. the variable time permitted for study.
    3. the relatively little time and expense required in gathering adequate pictures.
    4. the relatively little guidance students need in drawing conclusions from flat pictures.

21. You wish to use flat pictures to teach concepts. Select the technique which will most likely minimize superficial learning?
    1. hold the pictures in front of the class, one at a time, and explain each picture.
    2. arrange students in groups, distribute sets of pictures to each group, with instruction sheets for study purposes.
    3. explain each picture, then pass it among the students.
    4. place pictures on a browsing table where students may study.
    5. all of the above.

22. To maximize the learning effect of a field trip, the teacher should be certain to:
    1. involve the students in planning objectives for the trip.
    2. require the students to write or talk about their experiences.
    3. provide supplementary materials in the classroom for answering further questions.
    4. do all of the above.
    5. do 1 and 2 only.

23. Which of the following is required in teaching with a motion picture that need not be done in using a filmstrip?
    1. guide and direct students' attention during presentation.
    2. clarify unique characteristics of the motion picture before showing.
    3. keep the projection process as unobtrusive as possible.
    4. check for the learning of the content.

24. A motion picture to be used primarily to introduce a unit of study may differ from one suited for summarization in that the introduction-type film will need:
    1. a more rapid pace.
    2. a more logical organization.
    3. more facts per minute.
    4. a more emotional approach.

25. Immediately following the showing of a motion picture with a high emotional appeal, the most appropriate action for the teacher is to:
    1. administer a factual test.
    2. allow students time to "recover".
    3. deemphasize scenes characterized by sentimentality.
    4. remind students that what they have seen is a filmed play and not reality.

26. You assign television "viewing" homework to upper elementary or high school students. Which of the following could be expected to result in the greatest benefit?
    1. announce program title, channel and time. Tell students that they are expected to view the program.
    2. develop a discussion guide sheet with the students for use during the broadcast. Use it as basis for class discussion.
    3. discuss a program in advance of its broadcast and suggest that the students watch.
    4. list programs of various types and announce that they will be discussed in class.

27. Which verb most logically describes the goal of conceptual learning?

1. performing
2. feeling
3. understanding
4. recognizing

28. Which verb most logically describes the goal of perceptual learning?

1. performing
2. feeling
3. thinking
4. recognizing

29. Which verb most logically describes the goal of attitudinal learning?

1. knowing
2. believing
3. recognizing
4. understanding

30. Which verb most logically describes the goal of motor skill learning?

1. performing
2. recognizing
3. understanding
4. thinking

31. Which verb most logically describes the goal of intellectual skill development?

1. understanding
2. believing
3. recognizing
4. thinking

32. Highly verbal students may be limited in learning from materials that have a set pace (motion pictures, recordings):

1. because they usually can "take in" ideas faster than such materials usually present them.
2. because highly verbal students are usually also the ones who learn best through symbolic materials.
3. because unless such students are required to "wrestle mentally" with abstractions and symbols, they will not learn much.
4. because anything that can be "pictured" can also be verbalized.

Classify each of the following materials or experience:

33. Field trip to a flour mill

34. A graph of the price of wheat since 1900

35. A play store.

36. The chalkboard.

37. A photograph of a bad accident.

38. A recorded drama.

39. An unillustrated lecture.

40. A cutaway jet engine.

41. A dead lobster preserved in formaldehyde.

1. Reality
2. Representational
3. Symbolic
4. None of the above

42. The felt board.

43. Typing letters for a H.S. principal by a commercial student.

44. An Esso map of Pennsylvania.

45. The connected parts of the fuel system of a Ford fastened to a panel of plywood.

46. The most practical pick-up tube for closed-circuit television cameras is:
    1. An image orthicon.
    2. A vidicon.
    3. A kinescope.
    4. An iconscope tube.

47. If you want to find the title of a motion picture film the best publication to consult would be:
    1. The catalog prepared by H. W. Wilson.
    2. The audio-visual book by Sands.
    3. The catalog prepared by Educators Progress Service.
    4. Film Review Digest.

48. One of the following persons is renowned for his summaries of audio-visual research.
    1. William Allen.
    2. James Kinder.
    3. Emily Jones.
    4. H. W. Wilson.

49. A cartoon usually:
    1. can present both sides of an issue.
    2. cannot deal with controversial topics.
    3. takes sides in a controversy.
    4. discourages stereotyped thinking.

50. One of the following forms of drama has no movement or speaking:
    1. pantomime.
    2. tableau.
    3. pageant.
    4. role playing.

51. One of the following men is not an author of an A-V text.
    1. Harcleroad.
    2. Kinder.
    3. Dale.
    4. Douglass.

52. Convex lenses in a projector will:
    1. magnify the film image.
    2. invert the film image.
    3. concentrate the light on the film.
    4. do all of the above.

53. Which of the following refers to maps?
    1. Conic projection.
    2. Isometric projection.
    3. Diascopic projection.
    4. Triangular projection.

54. The actual picture area of a single frame filmstrip is:
    1. 35mm x 1".
    2. 1" x 3/4".
    3. 1" x 1½".
    4. 2" x 2".

55. Which of the following diagrams would represent the way a pioneer would generally teach his son to hunt?

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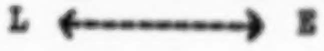

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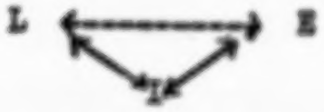

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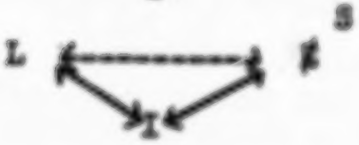

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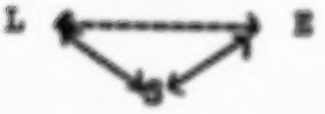

L - Learner
E - Environment
I - Intermediary or Intercessor (parent)
S - Substitute and/or symbol for environment

56. In the first showing of a filmstrip in which there is definite continuity, the teacher should:
    1. Stop the projector only when pupils ask sensible questions.
    2. Stop the projector occasionally and ask thought provoking and attention directing questions.
    3. Avoid stopping the projector at any time if possible without "squalching" pupils.
    4. Encourage criticism throughout the showing of the filmstrip.

57. Parental permission for the field trip
    1. Relieves the school of any responsibility in case of accident.
    2. Is possibly most important as a school parent-public relations measure.
    3. Place responsibility for accidents solely upon chief school officials.
    4. Protects the teacher from law suits by parents in case safety measures for the trip prove inadequate.

58. When a field trip is taken to a place which furnishes a guide, and the guide delivers a prepared lecture:
    1. The guide should not be interrupted in any of his remarks by student questioning.
    2. Where possible, before the visit the guide should be informed about the trip objectives and the age of group on the field trip.
    3. Even though the teacher might notice that the guide speaks beyond pupil comprehension, common courtesy demands her silence.
    4. All hard of hearing students should be at the front of the group so that they may hear clearly.

59. The teaching effectiveness of a demonstration may be improved by:
    1. Dramatizing the performance.
    2. Outlining the steps on the chalkboard.
    3. Keeping the process reduced to its simplest elements.
    4. All of the above.

60. As compared with a motion picture demonstration, the "live" demonstration:
    1. Has the advantage of meeting more adequately the individual pupil needs.
    2. Offers less distractions for the pupil.
    3. Requires less skill than that which one expects in a motion picture.
    4. Requires less supplementary aids than the motion picture demonstration.

2. Attitude Scale

RATING SCALE

Use the answer sheet with the headings - SA (Strongly Agree);
A (Agree); U (Undecided);
D (Disagree); SD (Strongly
Disagree).

Place a mark under the column which best indicates your feeling about each statement. The following paragraph will serve as the definition of what is meant by Audio-Visual materials.

Audio-Visual materials encompass all instructional devices and techniques ranging from real objects through models, dramatizations, demonstrations, field trips, motion pictures, television, radio and recordings, still pictures, the bulletin board, felt board, and chalkboard to charts, graphs, maps, posters, diagrams and cartoons.

1. Learning through words seems easier for the majority of students than learning through visual devices.

2. In comparison to other ways of teaching, too much extra work is required to use audiovisual materials.

3. I think some audiovisual materials can be used to present information better than an instructor.

4. It is probably true that teachers who use audio-visual materials maintain as high academic standards as those who don't use them.

5. If asked to choose courses important to their future success, teacher trainees should certainly enroll in an audio-visual course.

6. I think some concepts can be taught better through certain special types of audio-visual materials.

7. Regardless of how some people feel, it seems that audio-visual materials have proved themselves as being desirable in the classroom.

8. As far as I am concerned, using audio-visual materials makes learning too superficial.

9. Exposure to audio-visual materials should inspire students to some greater curiosity and learning than they would otherwise have.

10. Audio-visual materials may be important but I feel they have been a little over emphasized.

11. Every school should have some easy way for ordering and distributing audio-visual materials and equipment.

12. Children almost certainly don't remember as much of the content presented visually as they do by other means.

13. There should be a sharply declining emphasis on audio-visual teaching in our schools.

14. In my estimation, the use of audio-visual materials in teaching has some importance.

15. I would actively oppose the use of most audio-visual materials in teaching.

3. Picture Test

MATCHING - ANSWER SHEET

Match the drawings with the following vocabulary list. Please DO NOT MARK ON THE PICTURE SHEET. Use one answer only.

__________ 1. Cutaway

__________ 2. Marionette

__________ 3. Mockup

__________ 4. Flow chart

__________ 5. Diorama

__________ 6. Template

__________ 7. Recorder

__________ 8. Isotypes

__________ 9. Episcopic projection

__________10. Stereoscope

__________11. Filmstrip

__________12. Specimen

__________13. Mercator projection

__________14. Bar graph

__________15. Felt board

PICTURE TEST

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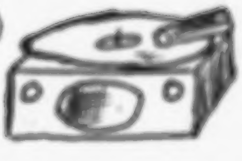

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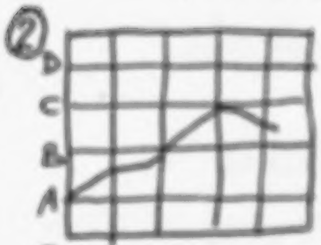

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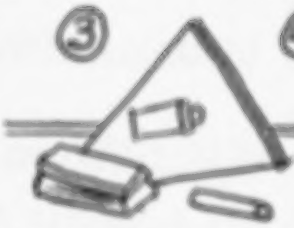

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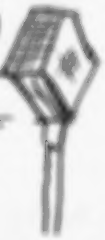

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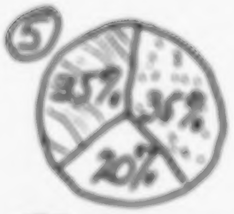

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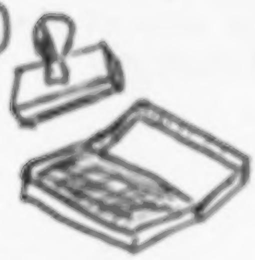

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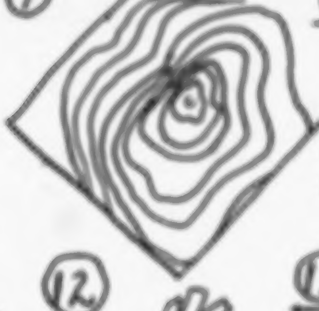

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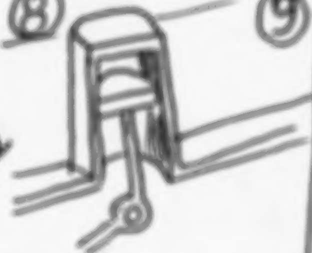

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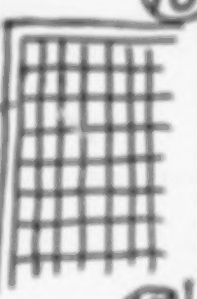

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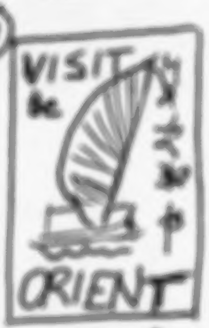
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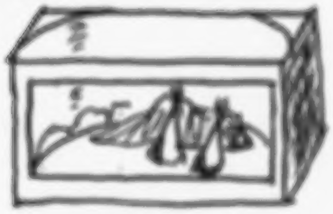

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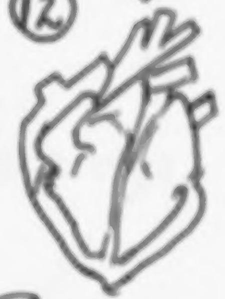

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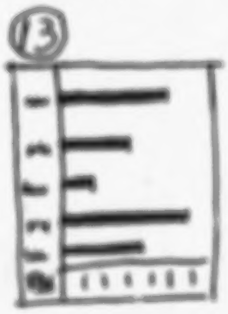

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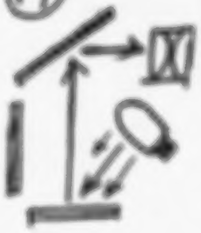

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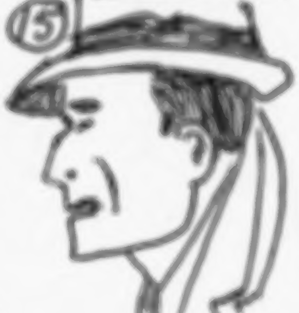

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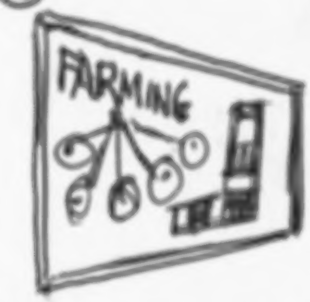

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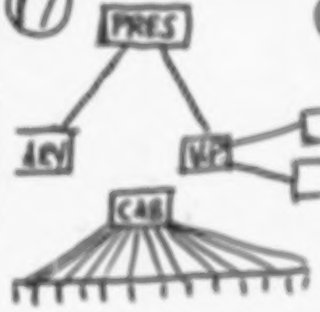
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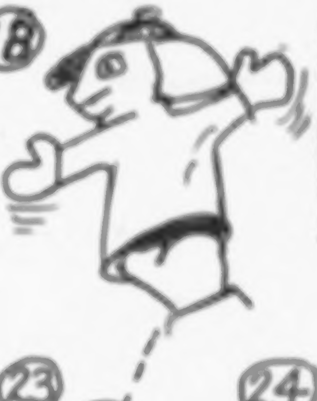

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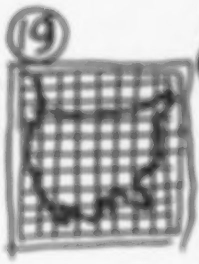

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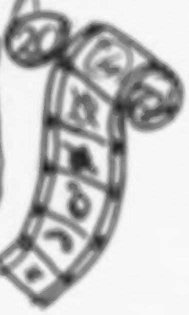

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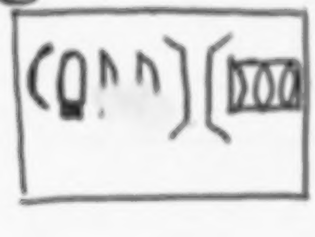

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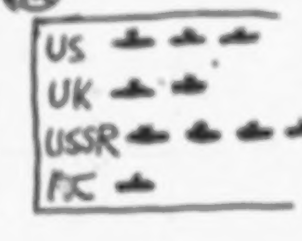
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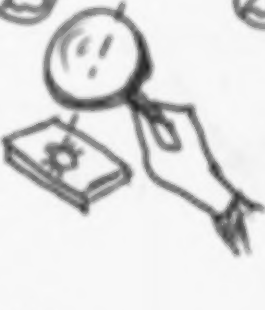

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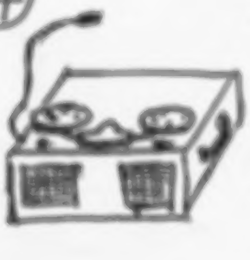

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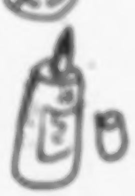

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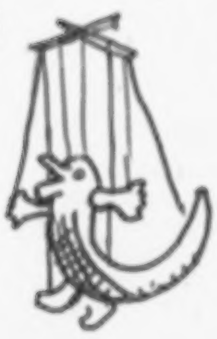

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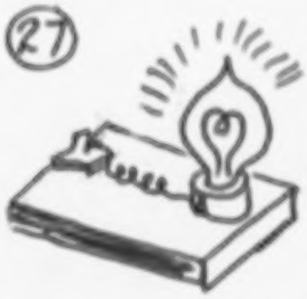

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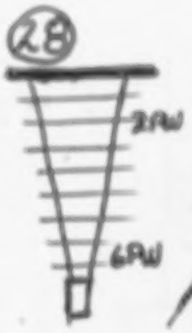

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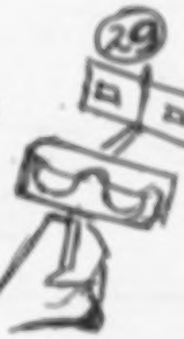

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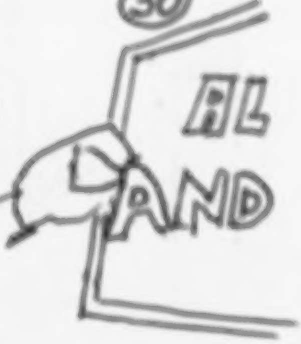
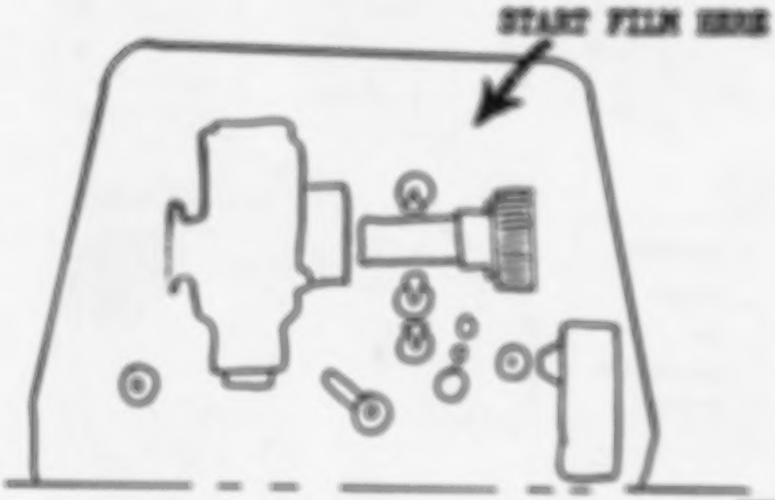


4. Laboratory Written Test

AUDIO-VISUAL EQUIPMENT

The following drawings are schematic diagrams of three 16mm motion picture projectors. Identify each diagram by writing the trade name of the projector in the space provided. Draw the film path on each projector.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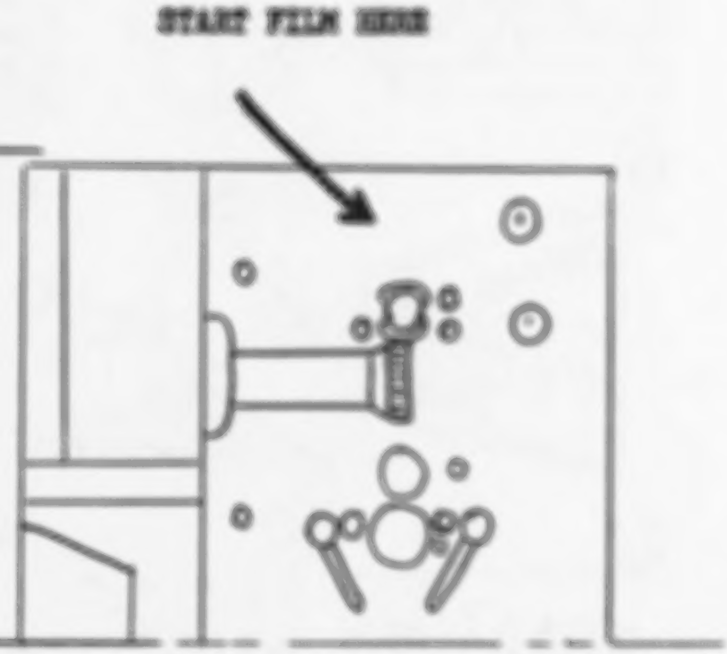
1. ______________________________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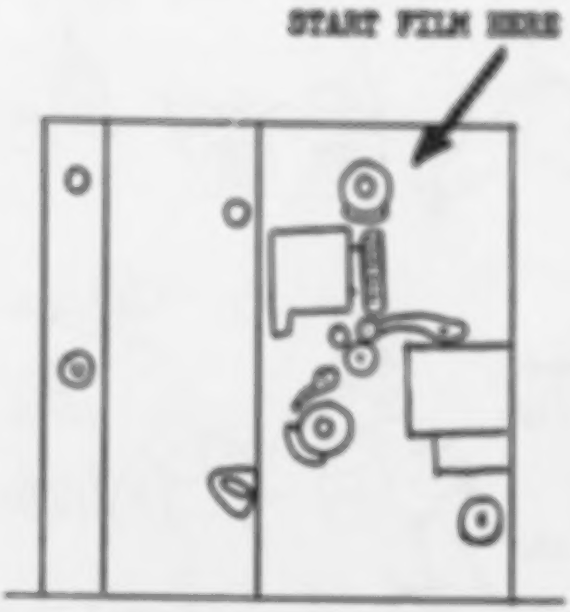
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3. ______________________________

MATCHING

During the projection of a 16mm film, the following may occur. In the blanks provided, place the number of the most likely cause of the difficulty.

______ Projecting a sound film; no sound although the amplifier switch is on and the projector motor runs.

______ Picture "jumps" on the screen.

______ Sound resembles the "putt-putt" of a motorboat engine.

______ Picture and sound are not synchronized.

______ Projection lamp burns out shortly after projector has been started

______ Take-up reel does not rotate; film falls to the floor.

______ Sound is distorted by fuzziness and "wow".

1. Bottom loop is too large or too small.
2. Top or bottom loop is lost.
3. The cooling system is defective.
4. Silent film is being projected with the amplifier "on" and volume "up".
5. The drive belt is broken or not operative.
6. Speaker is not connected to the amplifier
7. The film is loosely threaded around the sound drum.
8. The power cord is not plugged into the receptacle.
9. Framing is not adjusted.

Examine this list of defects in the operation of the magnetic tape recorder and place in the blank provided the number of the most likely cause of the difficulty.

______ Not recording, although the microphone had been plugged in properly and the buttons and switches were set correctly. Other tapes play back properly.

______ Continuous "blasting" when recording is played back.

______ Sound cuts out and in without fading.

1. Loose wire in the amplifier or defective tube.
2. Microphone wire broken.
3. "Record" level was set too high resulting in overloading.
4. Recording head is out of alignment.
5. Microphone too near loudspeaker of the tape recorder during recording.

COMPLETION

In projecting slides and filmstrips, the following difficulties may be encountered. In the space provided, tell briefly what is wrong in each situation.

1. Dark areas on the screen which persist even when the slides or frames are changed.

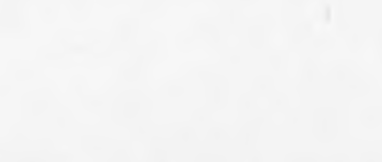
2. The projected image is too large for the screen.

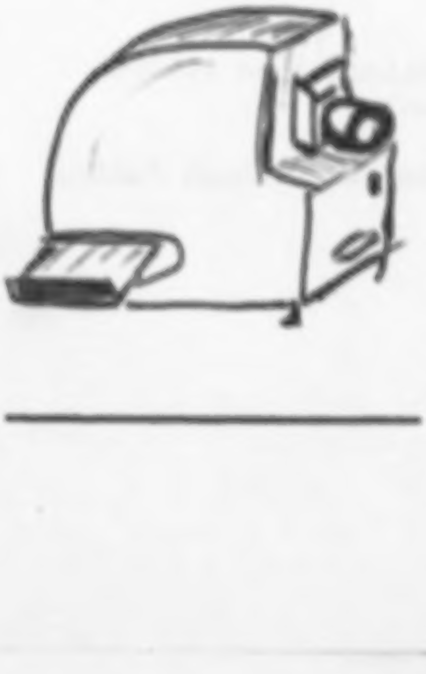
3. When one side of the picture on the screen is sharply focused, the other side is out of focus.

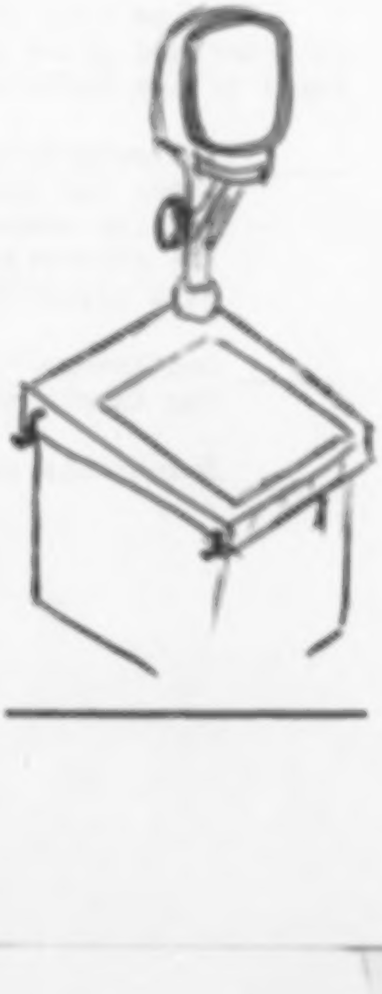
4. The image on the screen has an external shape resembling a "Keystone", wider at the top than at the bottom.

5. Parts of two pictures appear on the screen.

Identify each projector by writing the "common" name for each in the appropriate blank.







6. ________________ 7. ________________ 8. ________________

MULTIPLE CHOICE

1. The proper order for operating a 16mm sound motion picture projector is (assuming the sound is "warmed up" during film threading):

   a. lamp, motor, volume
   b. motor, lamp, volume
   c. lamp, volume, motor
   d. volume, lamp, motor

   Answer here________________

2. You are standing at the rear of the slide projector facing the screen, how shall you insert this slide into the carrier?

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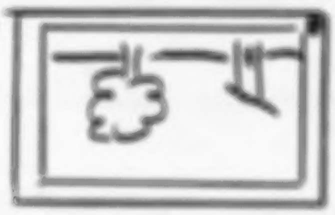

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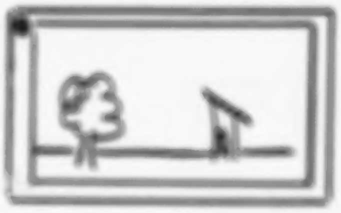

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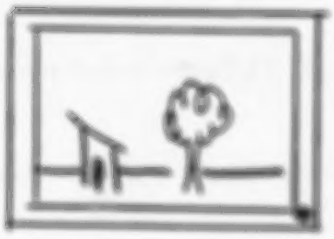

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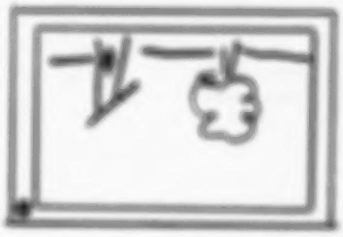
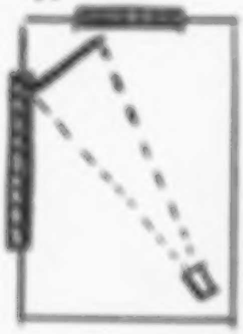


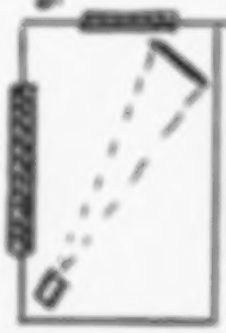
   Answer here________________

3. What represents the best screen placement when the room cannot be adequately darkened? (Crosshatched areas represent windows.)

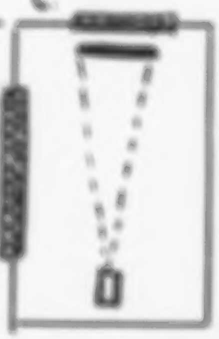
A.



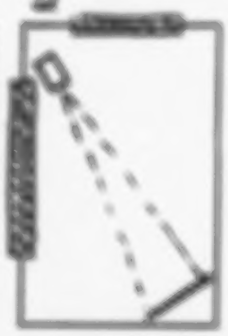
B.



C.

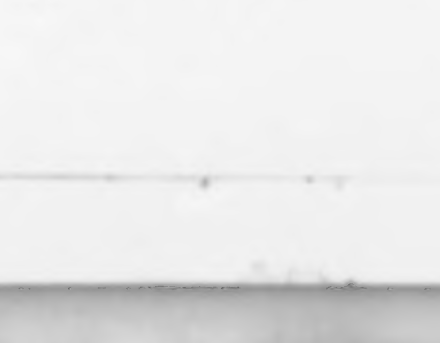


D



   Answer here________________

4.



In this diagram of a motion picture projector sound reproducing system, which part will you check first when you can't get sound - after you have checked threading, film and fuse?

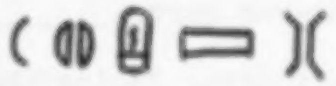
a. "A" b. "B" c. "C" d."D"
Answer here ________________

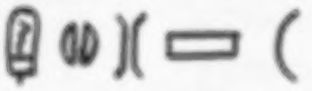
5. **How long is a three-reel 16mm sound film?**

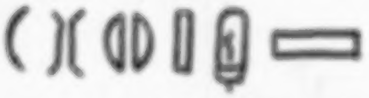
a. 300' b. 900' c. 1200' d. 1600'

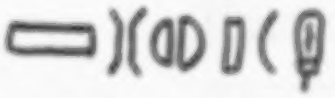
Answer here____________

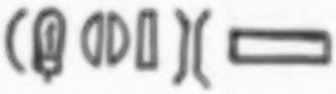
6. **Which is the correct order of elements in the straight-line projection system here left to right, assuming the rear of the projector is to the left.**

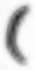
A. 

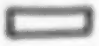
B. 

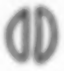
C. 

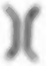
D. 

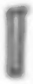
E. 

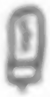
Reflector\-\-\-\-\-\-\-\-\-\-\-\-\-\-\-\- 

Projection lens\-\-\-\-\-\-\-\- 

Condensing lens\-\-\-\-\-\-\-\- 

Aperture location\-\-\-\-\-\- 

Heat filter\-\-\-\-\-\-\-\-\-\-\-\- 

Projection lamp\-\-\-\-\-\-\-\- 

Answer here____________

5. Laboratory Performance Check Lists (Samples)

NAME______________________________ DATE______________________

V-M (6 minutes)

1. Remove lid, plug in cord ______
2. Place feed reel and take-up reel on spindle ______
3. Thread tape ______
4. Turn on amplifier ______
5. Adjust speed to 7.5 ______
6. Plug in microphone ______
7. Test microphone for volume ______
8. Set counter to "0" ______
9. Record assigned sentence ______
10. Rewind ______
11. Playback recording ______
12. Rewind completely ______
13. Remove reel ______
14. Remove microphone, repack in case ______
15. Turn off amplifier ______
16. Remove power cord, replace in case, replace lid ______

16

______errors

Total score

Set up tape recorder and record the sentence which is taped to the lid of the machine. Rewind and play back the recording. Dismantle and repack the equipment.

Procter's Initials ______

NAME ______________________________ DATE ______________________________

BELL AND HOWELL (5 minutes)

1. Open case, plug in power cord ______
2. Mount feed arm and belt ______
3. Mount take-up arm and belt ______
4. Turn on projector, focus lens ______
5. Turn on projector, clean aperture ______
6. Elevate ______
7. Turn on amplifier ______
8. Place take-up reel on arm ______
9. Place film on feed arm ______
10. Remove 5' of film ______
11. Secure first sprocket ______
12. Establish upper loop ______
13. Place film in gate, close gate ______
14. Establish lower loop ______
15. Secure second sprocket ______
16. Lead film around sound drum ______
17. Secure third sprocket ______
18. Lead film and secure on take-up reel ______
19. Turn on projector ______
20. Turn on lamp ______
21. Bring up volume ______
22. Frame - focus ______
23. Reverse reels ______
24. Lift and engage rewind gears ______
25. Rewind ______
26. Remove film and take-up reel ______
27. Dismantle arms and belts ______
28. Unplug power cord and replace ______
29. Close case, adjust elevator ______

29

Total score ______________ errors

Set up projector - project film - rewind film - pack up projector.

Proctor's Initials __________

NAME ______________________________ DATE ________________________

VIEWLEX (6 minutes)

1. Remove case cover, attach cord __________
2. Turn on switches - focus lens __________
3. Elevate image __________
4. Remove filmstrip and check title position __________
5. Insert filmstrip in feed slot __________
6. Engage filmstrip and advance to first frame __________
7. Focus - frame __________
8. Project filmstrip __________
9. Remove filmstrip and rewind __________
10. Turn off lamp and fan __________
11. Remove filmstrip holder __________
12. Insert slide carrier - screw tight __________
13. Project first slide - frame focus __________
14. Project second and third slides __________
15. Remove third slide __________
16. Remove slide carrier - replace filmstrip holder __________
17. Repack cord and case __________

17
__________ errors
Total score

Set up projector to project the filmstrip you will find in the case. Rewind the filmstrip. Set up projector and project the three slides in the case. Repack the projector.

Proctor's Initials _____

FOLLOW-UP INSTRUMENTS: PHASE TWO

A1

NDEA PROJECT #079 Second Phase - Interviews

Purpose of Follow-Up

To measure (assess) the relative effects of four patterns in pre-service audio-visual preparation upon classroom performance of former students who have graduated and obtained teaching jobs in Pennsylvania.

1. To gather a detailed description of the schools and classrooms in which the former students are teaching as a basis for judging performance opportunities.
2. To observe the former students while active in the classroom as a basis for judging their proficiency in Instructional Material usage.
3. To interview the former students about the audio-visual preparation they received as a way of determining their attitude toward use of audio-visual materials and the impression left by the various patterns.
4. To interview supervisory personnel in the schools as a further basis for judging the former students' proficiency in Instructional Materials usage.
5. To determine the characteristics of the audio-visual related activities of a teacher (in terms of frequency and variety) relative to their pre-service preparation pattern.

A2

NDEA PROJECT #079 **Second Phase - Interviews**

Interview Procedures

1. Fill out information blank on persons.

2. Warm up conversation by telling person that this discussion will concern itself with the audio-visual course they took at Penn State University. (Do not mention pattern).

3. Ask question: What general part or parts of the course do you remember? (* If they talk about lab, record it but re-ask question to cover "more than equipment learning").

4. Record response to above question, writing key words, or phrase.

5. Ask interviewee to identify which of the above were of value in their teaching, by rating those of value in an order of importance.

6. Ask interviewee to identify those in list which were of little or no value and those about which they feel negative (if any were).

7. Any addition to list which result from questions 5-6 should be put into secondary list.

8. At end of interview give interviewee the booklet containing the "Course Effectiveness Inventory" and "Course Opinionnaire." Possible transition by interviewer might be: "You have now given us the points you remember about the course from memory. Here are a couple of forms that will remind you of points presented in the class, and ask for your reaction."

Second Phase - Interviews
R

School Description
Opportunities for Materials Usage
Ask questions of administrator

Name of teacher involved ______________________________ Date ____________

Name and address of school ____

1. Number of pupils in school __________ Number of teachers ________

2. Name of superintendent ____

3. Name of principal ____

4. Does building have an A-V coordinator: Yes__ No__ Full-time _____(50)

   Half-time ____(25) Quarter-time ____ (12) Less ____ (5)

   Name ______________________________________ 4. 50

5. Does the school system have an A-V supervisor: Yes__ No__

   Full-time __ (50) Half-time __ (25) Quarter-time __ (12)

   Less __ (5) 5. 50

6. Budget for Instructional Materials other than printed materials:

   Amount No. of teachers x $250 (0224)________________ 6. 250

   Expenditure at teacher discretion ________________

   Expenditure at administrators discretion ______________

   Restriction on expenditure ________________________

   (If maximum of $250 per teacher attained - then score is 100% of 250 points - if less - a fraction of 250. Write score in blank no. 6.)

7. No. of rooms in school ________ No. of rooms that can be darkened __________ (% x 100) 7. 100

8. Production Facilities: (No. of checks x 2) 8. 100
   (Chart on next page)

Check those available	Commercial Production	Teacher Produced	Centralized Production	Student Production
Charts......................				
Graphs......................				
Posters.....................				
Motion Pictures.............				
Flat Pictures Preparation..				
Still Photographs..........				
2x2 Slide Production.......				
3¼x4 Slide Production......				
Overhead transparencies....				
Models......................				
Dioramas....................				
Ink Duplicator.............				
Spirit Duplicator..........				

9. Are most films shown in specially-equipped room: Yes__ No__

Which? Auditorium ______ Classroom _________

10. Equipment available to teachers: 10. 200

A.

	Number available in school
Equipment stands............	
Screens.....................	

B.

	Number available in school
Record player...............	
Tape recorder...............	
Filmstrip projector.........	
2x2 Slide projector.........	
Comb. 2x2 Slide-Filmstrip...	
Auto 2x2 Slide Projector....	
3¼x4 Projector..............	
Filmstrip viewers...........	
Opaque......................	
Overhead....................	
Microprojector..............	
Movie (16mm)................	
Movie (8mm).................	
Chalkboard (portable).......	
Feltboards..................	
Bulletin Board (portable)...	
(Open).......	
Television.....(Closed).....	
Radios......................	
Teaching Machines...........	
Easels......................	

11. **Materials available to teachers:** 11. 150

	Number available in school
Motion pictures................	______
Pre-recorded tapes.............	______
Flat picture sets..............	______
Filmstrips.....................	______
3-Dimensionals.................	______
Feltboard material sets........	______
Maps...........................	______
Charts Flip..	______
Wall..	______
Disc. Recordings...............	______
Radio programs.................	______
Television programs............	______
Programmed materials:	
Machine..	______
Book.....	______

Demonstration Equipment: ____ ________________
____

12. Field trips: Total 12. 50
    a. not generally permitted ____
    b. by special permission only (10) __
    c. restricted to 3 or less a year (20) __
    d. restricted to 6 or less a year (30) __
    e. generally not restricted (40) __
    f. financed by school __ students__ both __
    g. form of transportation: school bus__ special charter__ private auto__ walking __
    h. is there a central file on field trip and community resources: yes ___ no___ (10)

13. How many of the following types of inservice training programs on instructional materials have taken place in the last two years:

Total 13. 50

a. Type: half-day or less ____x5=____

one day Institutes ____x10=____

b. Do you have an ongoing inservice program in this area: Yes__ (10) No ___

c. Who assumes responsibility for inservice training programs in the A-V area:
____

d. Source of outside help obtained for inservice programs in A-V area: __________
____

C1

NDEA PROJECT #079 Second Phase - Interviews
R

Classroom Description

Name of Teacher involved______________________ Date ______________

Name and address of school ____

____

1. Room Size ____________ Seating capacity __________
Movable Seats ______________ Fixed Seats ______________

2. Darkening: Opaque shades (80)__ Opaque drapes (100) ___ 2. 100
A-V Venetian (100) Standard Venetian (60)
Translucent drapes (40)_ Translucent shades (20__
Other ______________________

3. Electrical Outlet Locations __________(No. x 10) Location 3. 100
& No: Back_____ Front______ One side_____ Other side_____

4. Room light switch location: Front_____ Back _____ One side
(by door) _____ Other side ______ Dimmers_________

5. Valance lights and/or spots over chalkboard and display areas: 5. 50
Yes (50 pts.) _______ No. ________

6. Projection screens available: Yes____ No____ Fixed _____
Tripod______ Shadow Box______ Matte_____ Lenticular _____
Glass Beaded_____ Motor Driven_____ Size _______________

7. Equipment permanently in this teacher's classroom (check): 7. 200
(No. of checks x 10)

______ Screen
______ Record Player
______ Tape Recorder
______ Filmstrip 2x2 Projector
______ Chalkboard (Portable)
______ Peg board
______ Magnetic board
______ Auto 2x2 Slide Projector
______ 3¼x4 Projector
______ Opaque

______ Bulletin Board (Portable)
______ Felt board
______ Easel
______ Overhead
______ Microprojector
______ Movie (16mm)
______ Movie (8mm)
______ Television (Open)
______ " (Closed)
______ Teaching Machines

8. Materials permanently in this teacher's classroom (check): 8. 200
(No. of checks x 14)

______ Motion Pictures
______ Tapes
______ Flat Picture Sets
______ Filmstrips
______ Felt Materials
______ 3-Dimensionals
______ Magnetic Material

______ Maps
______ Globes
______ Charts: Flip
______ " Wall
______ Disc Recordings
______ Programmed Materials: Book
______ " " Machine

Demonstration Equipment (write in): ____________________

____

____

____

9. **Installed in room: Chalkboard (linear feet)** ________ 9. 75

Bulletin board (linear feet) ________ **(Chalkboard ft. + Bulletin board ft. x 1)**

10. **Display surfaces (linear feet)** ________ **(Total x 1)** 10. 75

11. **Work space for pupils and teacher: Yes__ No__ Approx. sq. ft.** ________ **(Divide by 4)** 11. 100

12. **Storage space: Walk-in Closet (10 pts)** ___ **Letter file (10 pts.)** ___ **Shelves (linear feet)** ___ **(Divide linear ft. by 3) (Total 3 items)** 12. 50

13. **Is this room permanently assigned to teacher: Yes** ___ **No** ___ **% of time**___ **(Multiple % of time x 50).** 13. 50

Remarks: ____________________

____

____

____

____

C2

NDEA PROJECT #079 **Second Phase - Interviews**

R

Class Visitation Check List

Name_________________ School_______________ Grade____ Subj._____

Elapsed time in classroom_______________

		Poor	Fair	Good	Excellent	Not Used
1.	Teacher made Bulletin Boards....					
2.	Pupil made Bulletin Boards......					
3.	Chalkboard......................					
4.	Study Table.....................					
5.	Filmstrip.......................					
6.	2x2 Slides......................					
7.	3¼x4 Slides.....................					
8.	Motion Pictures.................					
9.	Overhead transparencies.........					
10.	Opaque Projection...............					
11.	Charts..........................					
12.	Diagrams........................					
13.	Graphs..........................					
14.	Tape Recordings.................					
15.	Disc Recordings.................					
16.	Radio...........................					
17.	Classroom TV....................					
18.	Demonstration...................					
19.	Role Playing....................					
20.	Pantomine.......................					
21.	Scripted Play...................					
22.	Passing flat pictures...........					
23.	Holding flat pictures...........					
24.	Dioramas........................					
25.	Objects - Specimens.............					
26.	Models - Mockups................					
27.	Puppets & Marionettes...........					
28.	Sand Table......................					
29.	Contour Maps....................					
30.	Flat Maps.......................					
31.	Globes..........................					
32.	Peg board.......................					
33.	Magnetic board..................					
34.	Felt board......................					
35.	Murals..........................					

General Impression of Interviewer: ______________________________

____

____

D_1

NDEA PROJECT #079 Second Phase - Interviews

Information Sheet

Name ______________________________ This date ________

School Name and Address ______________________________

Grade Teaching: K 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Subject (Secondary) ______________________________

Year and Semester you took Educational Services 435 at Penn State ________

Year and Month you graduated from Penn State ______________

You were in the:

College of Education ___

Liberal Arts College ___

Other ________

D_2

Interview Notes

Name ______________ Pattern ________ Date ________

"What general part or parts of the course do you remember?" (If interviewee talks about laboratory activities, record comments. After he has finished, re-ask question to cover "more than equipment learning").

After interviewee has exhausted items remembered, ask him to rate each item (in right column) in relation to his teaching.

List items stated by interviewee below	Excep. Useful	Very Useful	Useful	No Response	Not Needed

(In actual interview more space was provided)

D$_5$

NDEA PROJECT #079 **Second Phase - Interviews**

Course Opinionnaire

Name ______________________________ **School** ______________

Grade ________ **City or Town** ____________________

Today's Date ____________ **Circle Pattern of Audio-Visual Course you attended:**

1. Self-Instruction 2. Student Teaching 3. Integrated 4. Regular Course

INSTRUCTIONS:

On the following page you will find a sentence referring to the Audio-Visual Course that you took at The Pennsylvania State University. Following it are two columns of words. The two words on each line are related as opposites. Between the two words on each line you will find seven spaces. These spaces should be considered a scale between the opposites listed. You are asked to respond to these opposites in the manner indicated below.

If you feel that the Audio-Visual Course was very closely related to one or the other of the words at the ends of a scale, you should place your check-mark as follows:

either FAIR ' X ' ' ' ' ' ' ' UNFAIR

or FAIR ' ' ' ' ' ' ' X ' UNFAIR

If you should feel that the Audio-Visual Course is quite closely related to one or the other end of a scale (but not extremely so), you should place your check-mark as follows:

either STRONG ' ' X ' ' ' ' ' ' WEAK

or STRONG ' ' ' ' ' ' X ' ' WEAK

In those situations where you feel that the Audio-Visual Course is only slightly related to one or the other end of a scale (but is not really neutral), then you are to place your check-mark as follows:

either ACTIVE ' ' ' X ' ' ' ' ' PASSIVE

or ACTIVE ' ' ' ' ' X ' ' ' PASSIVE

The direction and distance of your check-mark on the scale will depend upon your feelings as to which of the two ends of the scale seems most characteristic of the thing being judged.

However, if you feel that the Audio-Visual Course is: a) neutral on a given scale, b) equally associated with both ends of a scale, or c) is completely irrelevant and unrelated to both ends of a scale, then you are

D_5

to place your check-mark in the middle space as follows:

SAFE ' ___ ' ___ ' ___ ' X ' ___ ' ___ ' ___ ' DANGEROUS

REMEMBER, place all check-marks in between points provided, be sure to place a check-mark on each scale (omit none), and place only one check-mark on each scale.

FINALLY, many items will seem similar to previous items worked. They really are not. React to each scale by itself. Take your immediate reaction without pondering or worrying about it. You will thereby provide us with the information possible for our judging aspects of the Audio-Visual Course at The Pennsylvania State University. Thank you.

Keeping in mind the Audio-Visual Course you had at The Pennsylvania State University, indicate your feelings about that course by marking each of the scales listed below:

THOROUGH ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' INCOMPLETE

EASY ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' HARD

BEST ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' POOREST

EASILY DONE ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' TOO DIFFICULT

ACADEMIC ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' NON-ACADEMIC

IMPORTANT ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' UNIMPORTANT

BORING ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' INTERESTING

DESIRABLE ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' UNDESIRABLE

BASIC ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' SUPERFICIAL

UNINSPIRING ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' INSPIRING

OVER-EMPHASIZED ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' UNDER-EMPHASIZED

MEANINGFUL ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' MEANINGLESS

ACCEPTABLE ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' UNACCEPTABLE

EFFICIENT ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' INEFFICIENT

WORTHLESS ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' VALUABLE

PERFECT ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' IMPERFECT

IMPELLING ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' ___ ' RESISTING

D_5 (cont.)

COLORLESS	:___:___:___:___:___:___:___:	**COLORFUL**
GOOD	:___:___:___:___:___:___:___:	**BAD**
CONSTRAINED	:___:___:___:___:___:___:___:	**FREE**
ACTIVE	:___:___:___:___:___:___:___:	**PASSIVE**
SIMPLE	:___:___:___:___:___:___:___:	**COMPLEX**
SKILLFUL	:___:___:___:___:___:___:___:	**INEPT**
NAIVE	:___:___:___:___:___:___:___:	**SOPHISTICATED**
STRONG	:___:___:___:___:___:___:___:	**WEAK**
BELOW AVERAGE	:___:___:___:___:___:___:___:	**ABOVE AVERAGE**
STATIC	:___:___:___:___:___:___:___:	**DYNAMIC**
THOUGHT PROVOKING	:___:___:___:___:___:___:___:	**OBVIOUS**
NOT COMMENDABLE	:___:___:___:___:___:___:___:	**COMMENDABLE**
ORGANIZED	:___:___:___:___:___:___:___:	**DISORGANIZED**
DISSATISFYING	:___:___:___:___:___:___:___:	**SATISFYING**
PROFESSIONAL	:___:___:___:___:___:___:___:	**AMATEUR**
SCIENTIFIC	:___:___:___:___:___:___:___:	**UNSCIENTIFIC**
UNNECESSARY	:___:___:___:___:___:___:___:	**NECESSARY**
NEEDED	:___:___:___:___:___:___:___:	**NEEDLESS**
ATTRACTIVE	:___:___:___:___:___:___:___:	**REPUGNANT**
SHALLOW	:___:___:___:___:___:___:___:	**INTELLIGENT**

D_{5a}

Keeping in mind the Audio-Visual Course you had at The Pennsylvania State University, indicate your feelings about learning how to operate equipment by marking each of the scales listed below:

(Scales which followed were identical to the word dichotomies listed in D_5).

D6

NDEA PROJECT #079

Second Phase - Interviews
R

Course Effectiveness Inventory

Name ______________________________ School ______________

Grade ____________ City or Town ____________________________

Today's date ____________ Circle the pattern of the Audio-Visual course you took:

1. Self-Instruction 2. Student Teaching 3. Integrated 4. Regular Course

---

To what degree did your Audio-Visual Methods course help prepare you to do the following? For each of the items, check the appropriate degree of helpfulness. Since future revisions in the course will be influenced by your reactions, we urge you to be frank in your responses.

	Very helpful			Helpful			Not Helpful
	1	2	3	4	5	6	7
1. Using a recording							
2. Clarifying a bulletin board idea							
3. Learning from graphs							
4. Using felt board materials							
5. Seeing an educational TV program							
6. Running a motion picture projector							
7. Using words							
8. Taking a field trip							
9. Teaching with models							
10. Studying with pictures							
11. Planning chalkboard use							
12. Running a tape recorder							
13. Helping pupils study with movies							
14. Using diagrams to teach							
15. Threading a filmstrip projector							
16. Using puppets with students							
17. Performing a class demonstration							
18. Providing yourself with flat pictures							
19. Constructing overhead transparencies							
20. Choosing a filmstrip for a given lesson							
21. Keeping a study table in your classroom							
22. Teaching with an opaque projector							
23. Bringing real objects into a lesson							
24. Selecting the right material for a given task							

D6

Very helpful Helpful Not Helpful
1 2 3 4 5 6 7

25. Choosing instructional materials to fit the learner...................... ________
26. Projecting materials properly....... ________
27. Mounting pictures.................... ________
28. Recognizing good instructional materials............................ ________
29. Storing instructional materials..... ________
30. Helping colleagues use materials.... ________

31. Judging when to use a given material ________
32. Changing projection lamps........... ________
33. Recognizing when a recording is useful................................. ________
34. Cleaning projector lenses........... ________
35. Preparing follow-up activities...... ________

36. Recommending classroom design for instruction.......................... ________
37. Explaining your program to parents.. ________
38. Judging still pictures.............. ________
39. Locating needed pictures............ ________
40. Ordering motion pictures............ ________

41. Understanding the role of materials in learning.......................... ________
42. Tape recording materials for study.. ________
43. Visualizing a point to be learned... ________
44. Helping pupils use maps............. ________
45. Constructing mock-ups............... ________

46. Drawing on a chalkboard............. ________
47. Designing a bulletin board.......... ________
48. Knowing source catalogs for A-V materials............................ ________

D7 NDEA PROJECT #079 Second Phase - Interviews

Frequency of Use - Inventory

Name ______________________ School ______________________

Grade __________ City or Town ______________________

Today's date __________ Circle pattern of Audio-Visual course you attended:

1. Self-Instruction 2. Student Teaching 3. Integrated 4. Regular Course

Included here is a list of audio-visual materials and equipment. To what degree would you say you have used them during the present teaching year? Please place an X at that point in the scale that agrees with your best judgment.

	V.Frequently	Frequently	Occasionally	Seldom	Never
Chalkboard......................					
Feltboard......................					
Study table......................					
Flat pictures......................					
Charts......................					
Sound motion films......................					
Flat maps......................					
Field trip......................					
Models......................					
2x2 Slides......................					
Filmstrips......................					
Opaque projection......................					
Overhead projection......................					
Tape recorder......................					
Educational radio......................					
Educational television......................					
Museum displays......................					
Graphs......................					
Diagrams......................					
Bulletin boards......................					
Globes......................					
Specimens......................					
Exhibit......................					
Dioramas......................					
Role Playing......................					
3¼x4 Slides......................					
Record player......................					

SCHOOLS VISITED ON FOLLOW-UP

ELEMENTARY SCHOOLS

A. Leo Weil, Pittsburgh
Adams, Tyrone
Alexandria School, Alexandria
Allison, Wilkinsburg
Andrew Jackson, Williamsport
Annie B. Nye, Hummelstown
Bellefonte Area Jt., Bellefonte
Ben Franklin, Verona
Blair County, Hollidaysburg
Cedar Road, Abington
Central, Quakertown
Centre Hall School, Centre Hall
Chief Logan, Yeagertown
Collingdale School, Collingdale
Coopertown, Bryn Mawr
Cranberry Area, Seneca
Crooked Billet, Monroeville
Culbertson, Newtown Square
D. A. Marshall, Harrisburg
E. H. Phillips, Harrisburg
Easterly Parkway, State College
Espe Elementary, Pittsburgh 37
Evergreen, Monroeville
Fairview, Altoona
Fairview, Reading
Foose, Harrisburg
Forbes, Pittsburgh 16
George C. Shelmore, Southampton
Gladwyne School, Gladwyne
Glenside School, Glenside
Greentree, Paoli
Grove Street, Clarks Summit
Hanover, Bethlehem
Hebron, Pittsburgh 35
Herbert Hoover, Langhorne
Highland, Abington
Highland Park, Camp Hill
Highland, Pittsburgh 29
Highlands, Pittsburgh 27
Hillcrest, Hollidaysburg
Hillside, Berwyn
Hobson Place, Bradford
Holmer, Pittsburgh 13
Johnston, Bridgeville
Kerr, Pittsburgh 15
Keystone, Altoona
Lake Consolidated, Lake Ariel
Lemont Elementary, Lemont
Lincoln, Allentown
Lincoln, Pittsburgh 28
Lincoln, Birdsboro
Lincoln, Pittsburgh 16
Linglestown Elementary, Harrisburg
Logan, Lewistown
Lose, Williamsport
Lower Saucon, Hellertown
Lower Southampton, Feasterville
Makefield, Yardley
Markham, Pittsburgh 28
Matternville, State College
Melrose, Harrisburg
Milford Elementary, Milford
Mosser, Allentown
Jefferson, Mt. Lebanon
Neason Hill, Meadville
New Hanover-Upper Frederick,
  Frederick
North Coventry Twp., Pottstown
North Franklin Twp., Washington
North Side, Bellwood
North Street, New Castle
North Willow Grove, Willow Grove
Northside, Harrisburg
Oak Ridge, Tyrone
Oakmont, Havertown
Overlook, Abington
Penn Wynne, Philadelphia
Palmer Twp. Consol., Easton
Paoli Elementary, Paoli
Peebles, Pittsburgh 37
Penn Street, Hanover
Penn Lincoln, Altoona
Penn Valley, Levittown
Pine Glen, Karthaus
Pine Road, Huntington Valley
Pine Street, Palmyra
Pennsylvania Avenue, Prospect Park
Pleasureville, York
Poquessing, Feasterville
Pollock, New Castle
Ralph Waldo Emerson, Levittown
Roberts, Penn Hills, Pittsburg
Roosevelt, Allentown
Quarry Hill, Yardley
Sancon, Hellertown
Schuylkill Twp., Phoenixville
Spring Garden, Bethlehem
Stevens, Altoona
Sugartown, Paoli
Third Ward, Bradford
Tulpehocken Area Jt., Bernville
Unionville Elementary, Unionville

ELEMENTARY SCHOOLS (cont'd)

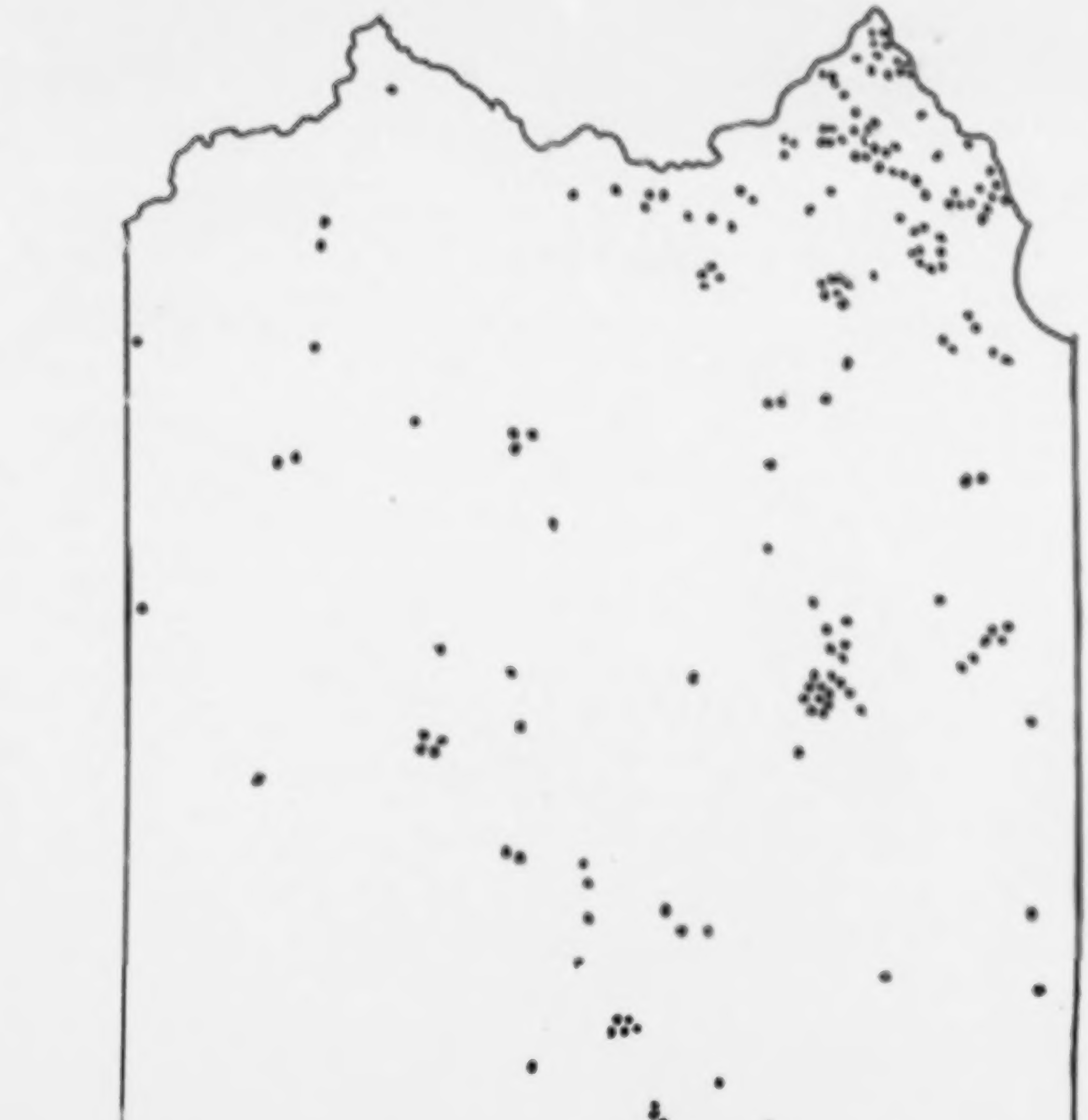
University Park, Monroeville
Upland Main Street, Upland
Upper Pottsgrove, Pottstown
Walker S. Miller, Levittown
Washington, Penn Hills, Pittsburgh 35
West Hazelton, West Hazelton
William Davis, Davisville
Willow Grove Christian Day, Horsham
William McKinley, Pittsburg
Woodlawn, Willow Grove
Wyncote Elementary, Wyncote
Westerly Parkway, State College

JUNIOR HIGH SCHOOLS

Abington Jr., Abington
Ardmore Jr., Ardmore
Benjamin Franklin, Levittown
Collingdale Jr., Collingdale
Conroy Jr., Pittsburgh
East Lycoming, Hughesville
Edison, Harrisburg
Floyd C. Fretz, Bradford
Governor Mifflin, Shillington
Hatboro-Horsham, Hatboro
Herron Hill, Pittsburgh
Hollidaysburg Comm. Jt.,Hollidaysburg
Keith, Hatboro
Lower Dauphin Jt., Hummelstown
Logan Area, Altoona
Lower Paxton, Harrisburg
Mifflinville Jr., Mifflinville
Milton Jr., Milton
Monroeville Jr., Monroeville
Natrona Heights Jr., Natrona Heights
Radnor, Wayne
Roosevelt, Altoona
Sayre Area, Sayre
Seneca, Verona
Souderton Jr., Souderton
State College Jr., State College
Susquehanna Twp., Harrisburg
Tamanend, Warrington
Upper Moreland, Willow Grove

SENIOR HIGH SCHOOLS

Altoona Sr., Altoona
Avon Grove Area, West Grove
Bald Eagle-Nittany Jt. Area, Mill Hall
Baldwin, Pittsburgh 36
Bangor Area Jt., Bangor
Blue Mountain, Schuylkill Haven
Bradford Area, Bradford
Butler Area, Butler
Central Bucks, Doylestown
Central Dauphin E., Harrisburg
Council Rock Jr. & Sr., Newtown
Dallastown Area, Dallastown
Derry Twp. Jr. & Sr., Hershey
East Lycoming Jt., Hughesville
Etna, Pittsburgh 23
Fannett-Metal Union, Willow Hill
Forty Fort High, Forty Fort
Great Valley, Berwyn
Greencastle-Artgin, Greencastle
Haverford Jt., Brookline
Hershey High, Hershey
Hollidaysburg Comm. Jt., Hollidaysburg
Kishicoquillas, Reedsville
Kiski Area, Leechburg
Lawrence Park, Erie
Liberty Sr., Bethlehem
Medill Bair, Fairless Hills
Memorial, Erie
Myerstown High, Myerstown
North Penn Jointure, Blossburg
Owen J. Roberts Jr. & Sr., Pottstown
Penn Hills Sr., Pittsburgh 35
Penns Valley Jr. & Sr., Spring Mills
Pennridge Jt., Perkasie
Penrose, Perkasie
Quaker Valley, Leetsdale
Quakertown Community, Quakertown
Quincy Twp., Quincy
S. Horace Scott, Coatesville
Solanco Area, Quarryville
Scott, Coatesville
Susquenita Jt. Jr & Sr., Duncannon
Susquehanna Twp., Harrisburg
Susquehanna Consolidated, Susquehanna
Tyrone Area, Tyrone
Unionville High, Unionville
Upper Dauphin, Elizabethville
Upper St. Clair, Bridgeville
Warrior Run, Turbotville
West Hazelton, West Hazelton
William Penn, York
Williamsburg Comm., Williamsburg

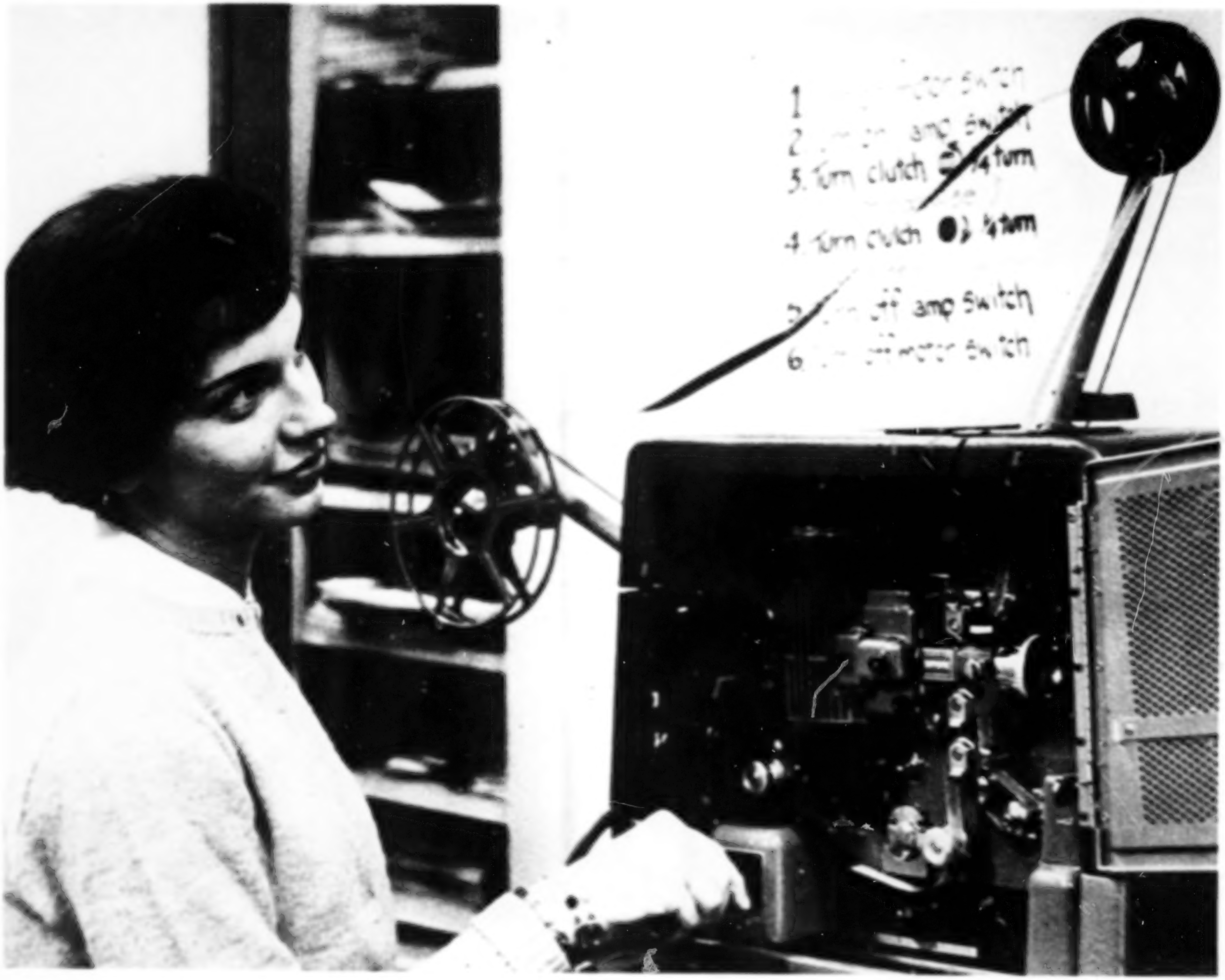


TEACHING LOCATIONS VISITED ON FOLLOW-UP

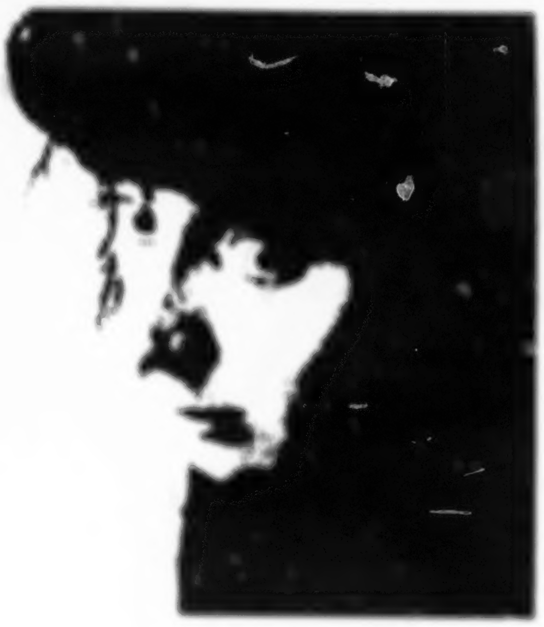
1 LISTEN HERE

SESSION 3....
FOLDERS

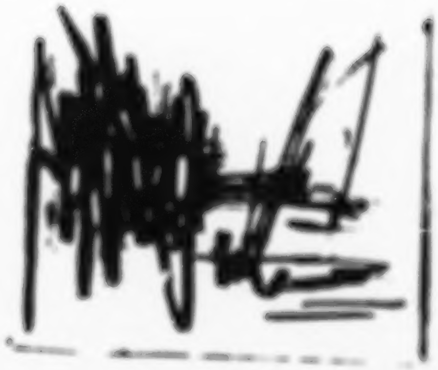
TRY YOUR HAND


1 motor switch
2 amp switch
3. Turn clutch ¼ turn
4. Turn clutch ¼ turn
5. off amp switch
6. off motor switch

ARE PICTURES LESS AMBIGUOUS THAN WORDS ...?



What does this picture communicate to you ?

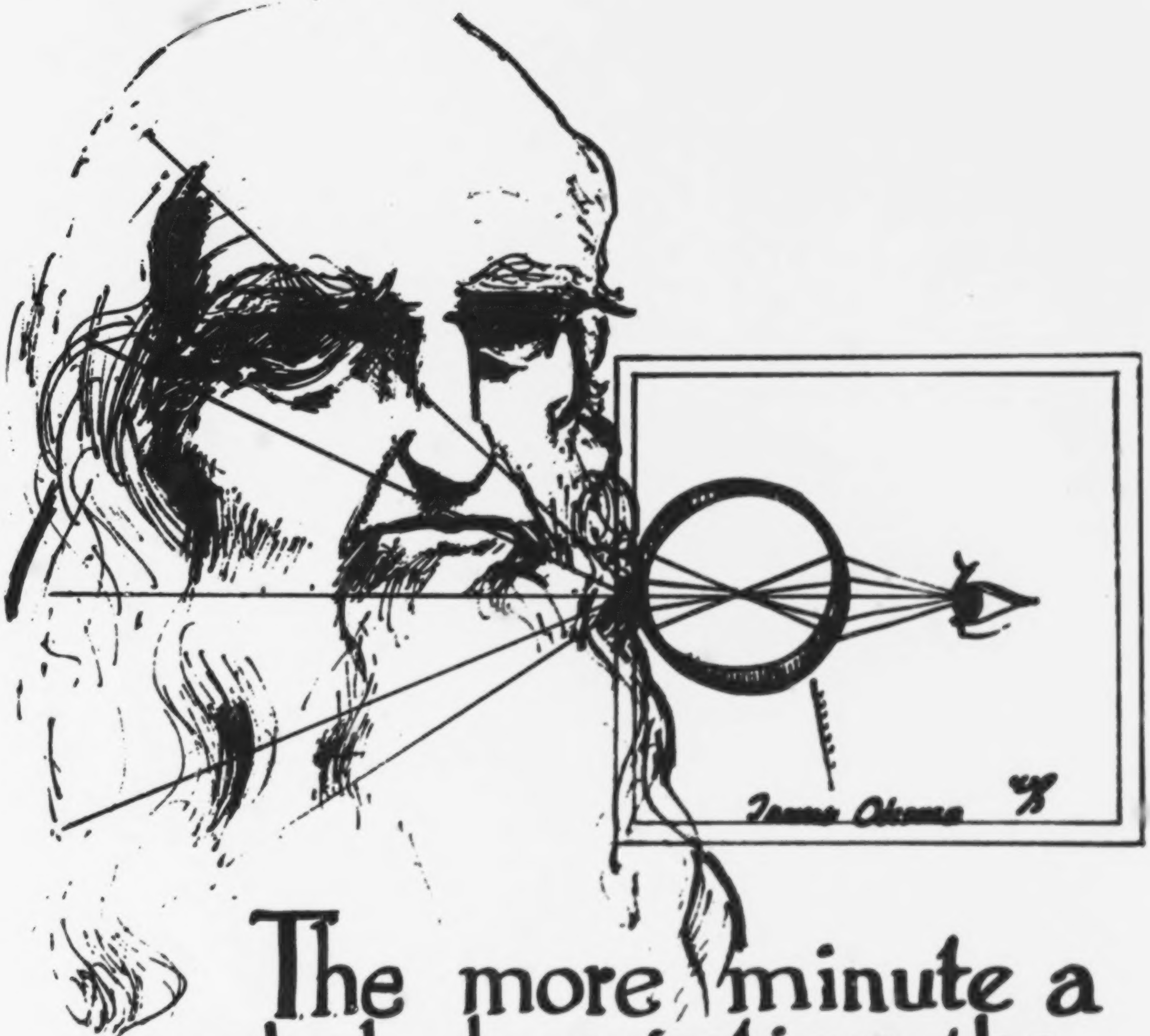


Write your answer on one of these cards and drop in box with slot.

THE NEW YORK TIMES MARCH 5TH

DIET OF ENGLISH, JAPANESE AND LATIN

LIST THE KINDS OF LEARNING FROM RECORDINGS MENTIONED IN THIS ARTICLE.



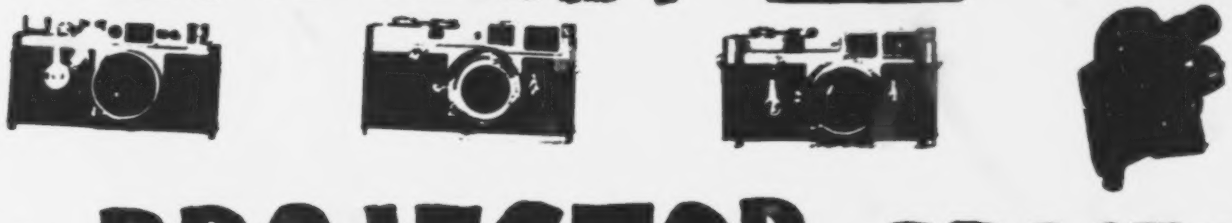
The more minute a verbal description, the more confusing it becomes and the more necessary to represent and describe.

Leonardo Da Vinci Camera Obscura 1508

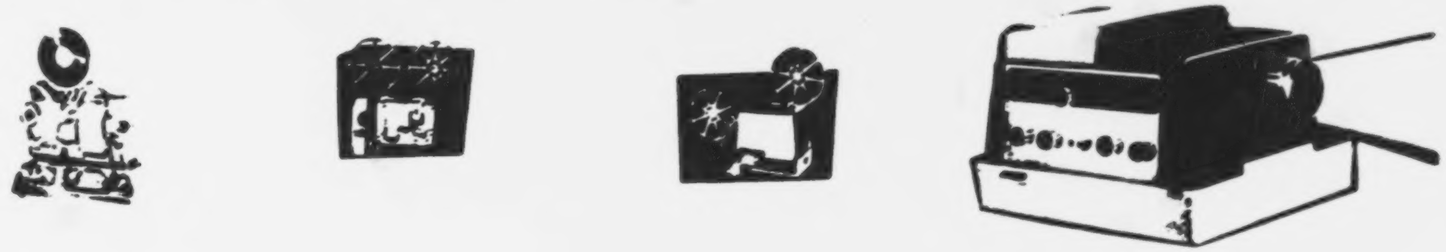
..TERMINOLOGY..

I DO NOT WISH TO SPLIT
HAIRS ***BUT....***
THESE ARE TERMS
YOU SHOULD KNOW:

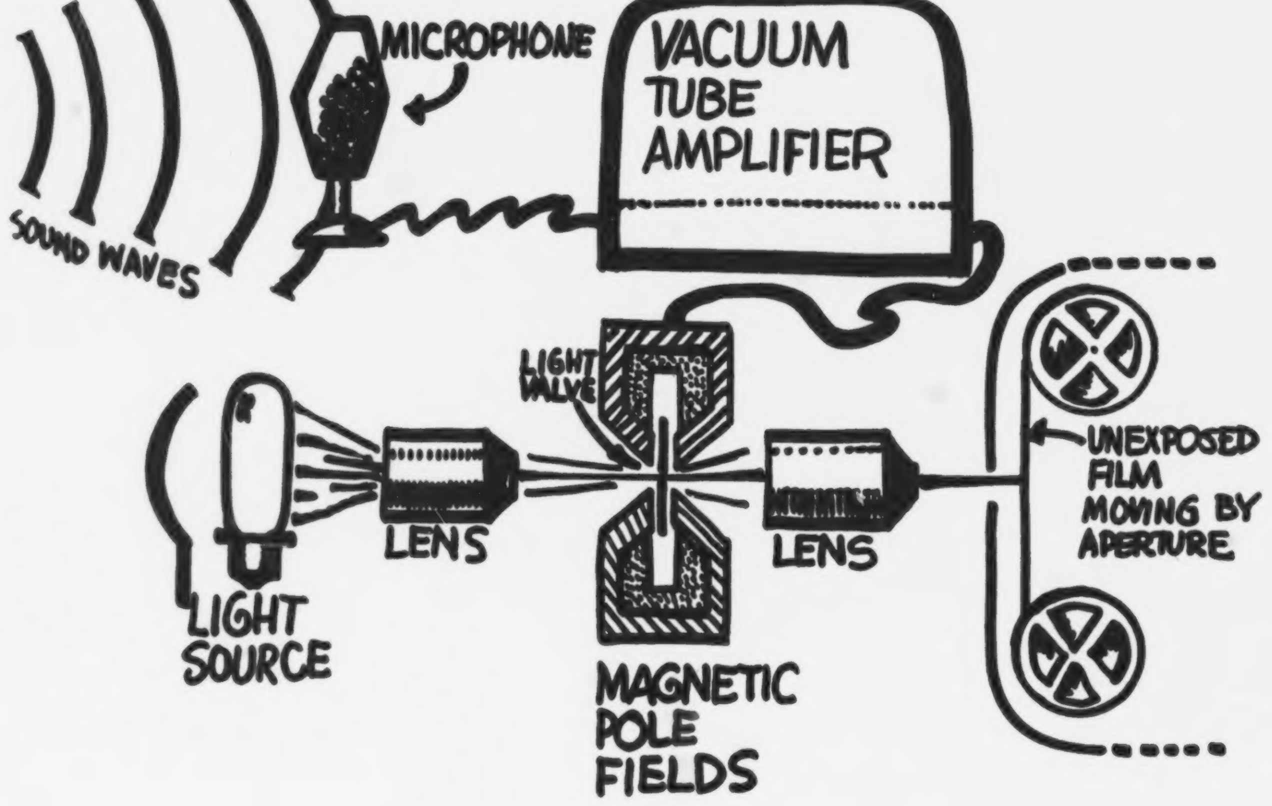
A **CAMERA** TAKES PICTURES!

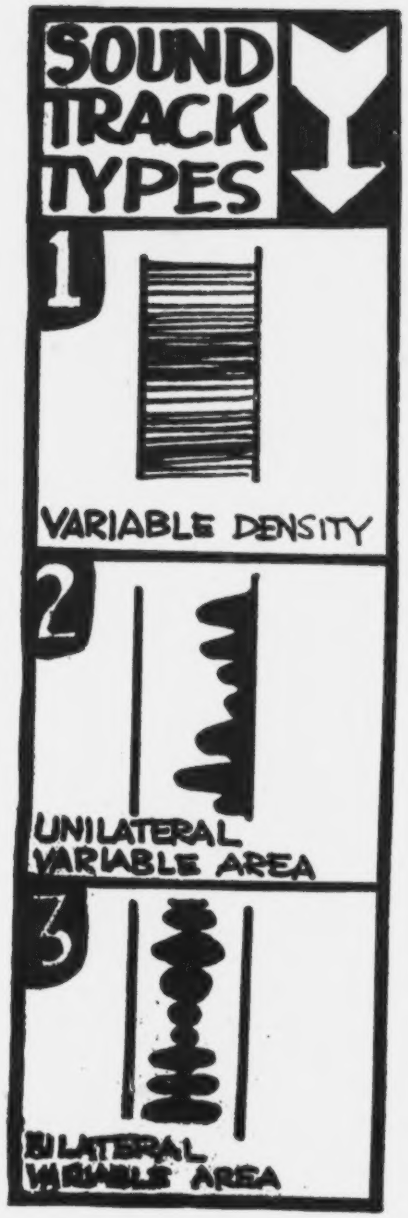


A **PROJECTOR** PROJECTS!



MOTION PICTURE OPTICAL SOUND RECORDING

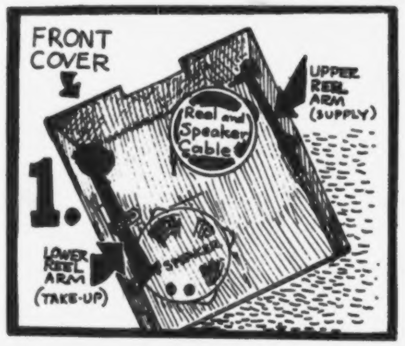

SOUND WAVES
MICROPHONE
VACUUM TUBE AMPLIFIER
LIGHT VALVE
LIGHT SOURCE
LENS
MAGNETIC POLE FIELDS
LENS
UNEXPOSED FILM MOVING BY APERTURE


SOUND TRACK TYPES
1
VARIABLE DENSITY
2
UNILATERAL VARIABLE AREA
3
BILATERAL VARIABLE AREA

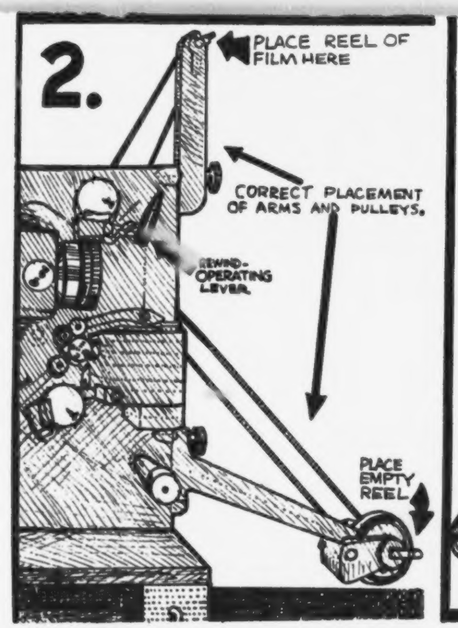
EDUCATIONAL SERVICES 435
INSTRUCTIONAL MATERIALS
ROOM 17 BURROWES BLDG.
PENN STATE UNIVERSITY

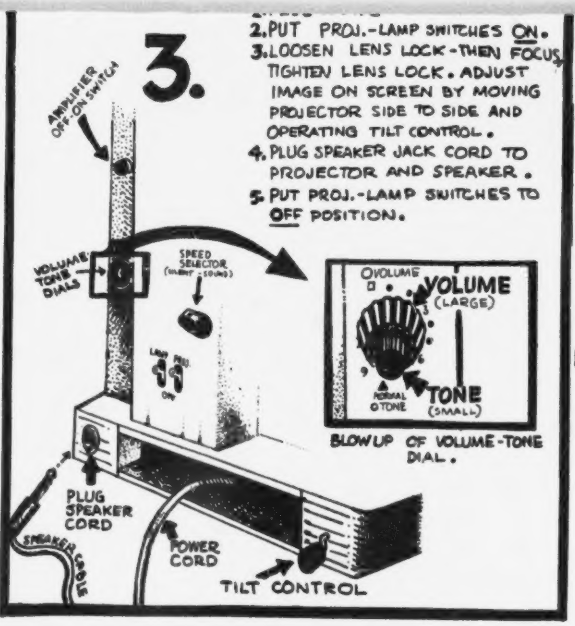
SETTING UP

REMOVE PROJECTOR COVER TAKE ACCESSORIES OUT. PLACE SPEAKER UP FROM FLOOR AND BESIDE PROJECTION SCREEN.


1.
FRONT COVER
UPPER REEL ARM (SUPPLY)
Reel and Speaker Cable
LOWER REEL ARM (TAKE-UP)

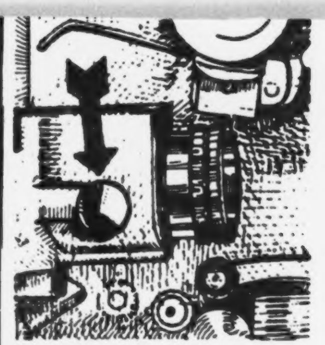
PLACE REEL ARMS AND SPRING BELTS IN PROPER POSITIONS. NEXT PLACE SUPPLY REEL (REEL OF FILM) ON TOP ARM AND TAKE UP REEL (EMPTY REEL) ON BOTTOM ARM (2.)


2.
PLACE REEL OF FILM HERE
CORRECT PLACEMENT OF ARMS AND PULLEYS.
REWIND-OPERATING LEVER
PLACE EMPTY REEL


3.
AMPLIFIER OFF-ON SWITCH
VOLUME TONE DIALS
SPEED SELECTOR (SILENT - SOUND)
LAMP PROJ.
ON
O VOLUME
VOLUME (LARGE)
TONE (SMALL)
NORMAL O TONE
PLUG SPEAKER CORD
SPEAKER CABLE
POWER CORD
TILT CONTROL

2. PUT PROJ.-LAMP SWITCHES ON.
3. LOOSEN LENS LOCK-THEN FOCUS, TIGHTEN LENS LOCK. ADJUST IMAGE ON SCREEN BY MOVING PROJECTOR SIDE TO SIDE AND OPERATING TILT CONTROL.
4. PLUG SPEAKER JACK CORD TO PROJECTOR AND SPEAKER.
5. PUT PROJ.-LAMP SWITCHES TO OFF POSITION.

BLOWUP OF VOLUME-TONE DIAL.



LOCATION OF LENS LOCK.

1 SWING LENS OPEN

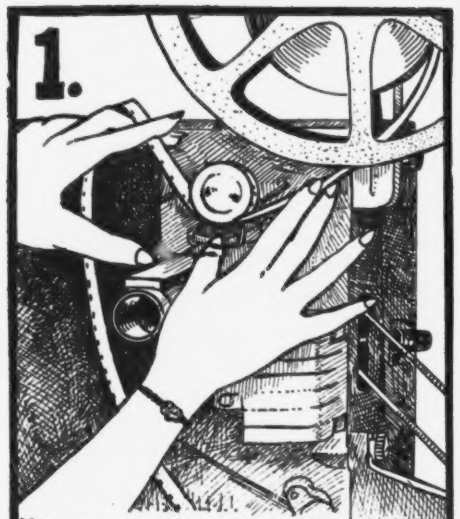
2 MAKE SURE THAT REWIND-OPERATE LEVER IS IN OPERATE POSITION (LABLED (SEE DRAWING 2.)

INSTRUCTIONAL MATERIALS
9 BURROWES BUILDING

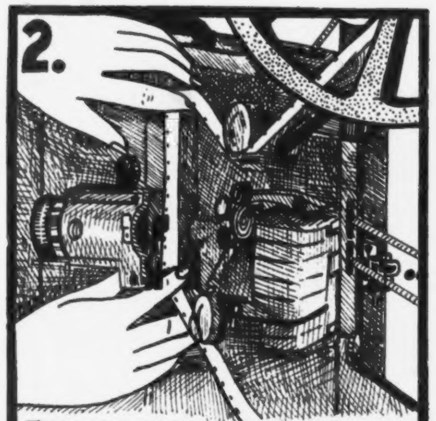
EDUCATIONAL
SERVICES 435

THREADING ···➜

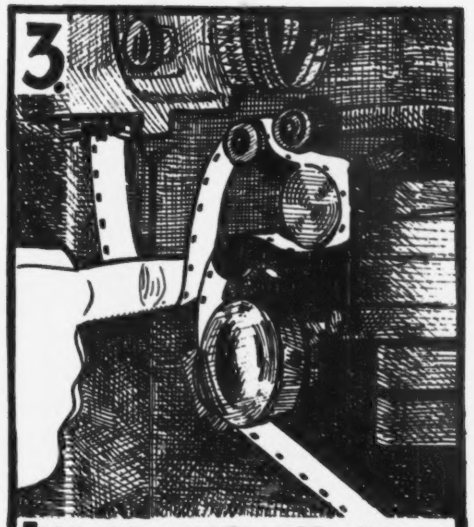
FOLLOW THESE DRAWINGS AND KEEP REFERRING TO THREADING CHART.



HOLDING FILM FOUR OR FIVE FEET FROM THE END, PRESS DOWN ON UPPER SPROCKET SHOE WITH YOUR RIGHT THUMB, SLIDE FILM IN. MAKE SURE SPROCKET TEETH ENGAGE HOLES, RELEASE SHOE.



FORM THE UPPER LOOP (ABOVE APERTURE PLATE) TO FOLLOW THE WHITE GUIDE LINE ON THE PROJECTOR FRAME. CLOSE LENS WITH YOUR THUMBS.



FORM THE LOWER LOOP BELOW THE PICTURE GATE AS INDICATED HERE AND BY MACHINED GUIDE LINE AND FINGER STOP. FINISH THREADING AS IN ILLUSTRATION AND CHARTS.

OPERATION

1. TURN AMPLIFIER OFF-ON SWITCH ON.
2. TURN VOLUME CONTROL TO "O" AND TONE CONTROL TO NORMAL.
3. TURN THE PROJ.-OFF SWITCH TO PROJ. and SPEED SELECTOR DOWNWARD TO SOUND.
4. TURN LAMP-OFF SWITCH TO LAMP.
5. SHARPEN FOCUS BY TURNING LENS BARREL.
6. ADJUST VOLUME.
7. FRAME THE PICTURE, IF NECESSARY, BY TURNING FRAMING KNOB UNTIL ONE COMPLETE PICTURE SHOWS.
8. WHEN THE LAST PICTURE HAS APPEARED ON THE SCREEN, AND BEFORE ALL THE FILM HAS PASSED THROUGH THE PROJECTOR, RETURN THE LAMP-OFF SWITCH TO THE OFF POSITION.
9. TURN VOLUME OFF. ALLOW FILM TO RUN THROUGH COMPLETELY.
10. TURN PROJ.-OFF SWITCH TO THE OFF POSITION.

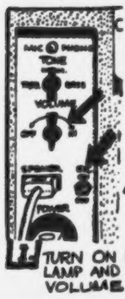
REWIND

1. BRING THE END OF THE FILM FROM LOWER REEL DIRECTLY TO THE UPPER REEL AND ATTACH. DO NOT TWIST. GIVE UPPER REEL A FEW TURNS COUNTER-CLOCKWISE TO TAKE UP SLACK.
2. TURN REWIND-OPERATE LEVER TO REWIND.
3. PUT PROJ.-OFF SWITCH SWITCH TO PROJ. LET FILM REWIND. TURN SWITCH OFF.
4. TURN REWIND-OPERATE LEVER TO OPERATE (IT WILL BE READY FOR NEXT VIEWING)

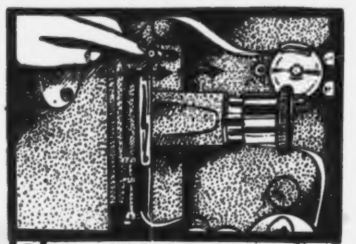
OPERATION

ED. SERV. 435

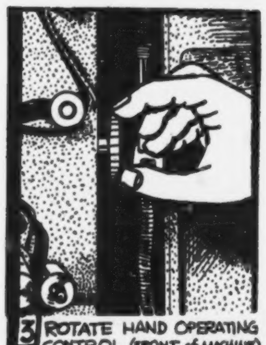
Follow numbers in order.



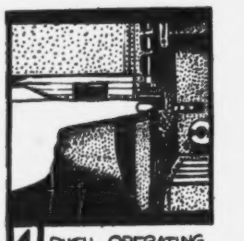
1 TURN ON EXCITER LAMP AND ADJUST VOLUME.



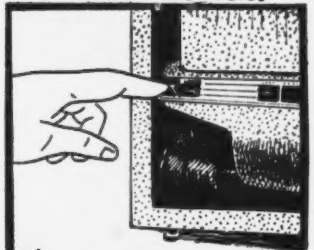
2 TOUCH TRIP LEVER FORWARD TO DISENGAGE THE CLUTCH.



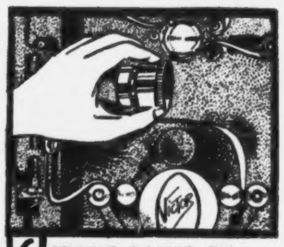
3 ROTATE HAND OPERATING CONTROL (FRONT of MACHINE) AWAY FROM YOU. CHECK FILM TAKE UP AND LOOPS.



4 PUSH OPERATING LEVER UP.

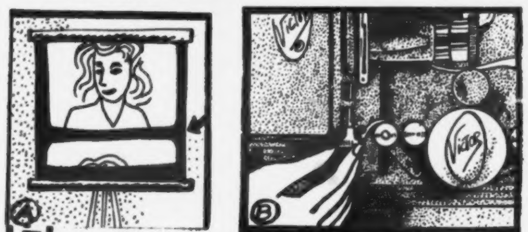


5 TURN MOTOR AND LAMP SWITCH ON.



6 REFINE FOCUS BY CAREFULLY ROTATING THE LENS BARREL.

**ADJUST VOLUME*

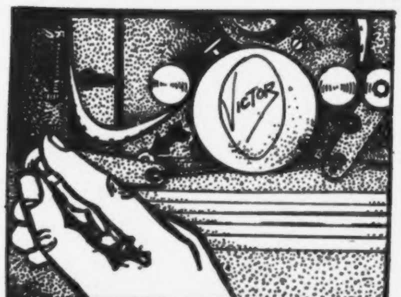


7 IF FRAME LINE SHOWS ON SCREEN (Ⓐ), TURN "FRAMER" (Ⓑ) TO ADJUST.

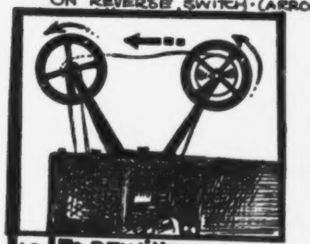
8 WHEN END TITLE APPEARS TURN OFF THE LAMP, VOLUME AND EXCITER LAMP. THEN ALLOW FILM TO RUN COMPLETELY THROUGH PROJECTOR. TURN MOTOR OFF.

NOTE: * Remember "L. S. M. f. T."

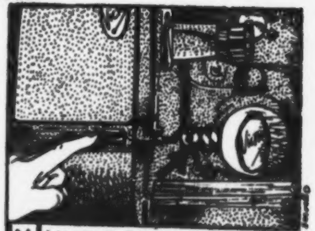
Lamp off
Sound off
Motor off when
Film is
Through.



9 TO RUN FILM BACKWARDS, LOWER REAR TENSION ROLLER WHICH TURNS ON REVERSE SWITCH · (ARROW).



10 TO REWIND = CONNECT FILM DIRECTLY TO REAR REEL. THEY WILL ROTATE COUNTER-CLOCKWISE. (TURN MOTOR ON)

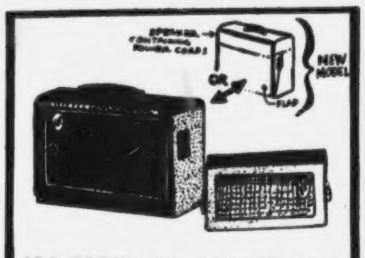


11 MAKE SURE THAT REAR TENSION ROLLER IS UP. (see arrow on Drawing 9) PRESS DOWN AND HOLD REWIND LEVER AS IN THIS DRAWING UNTIL FILM IS FULLY REWOUND.

** TURN MOTOR OFF.*

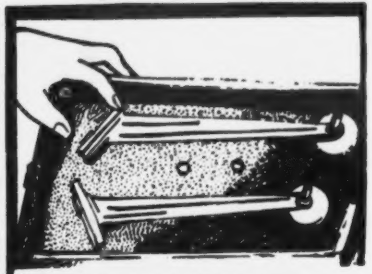
SETTING UP

ED. SERVICES 435

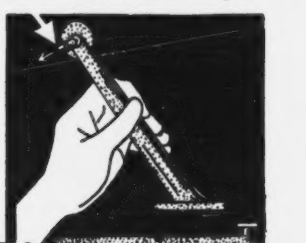


PROJECTOR AND SPEAKER CASE

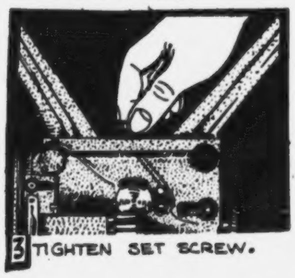
Follow directions by number ➡



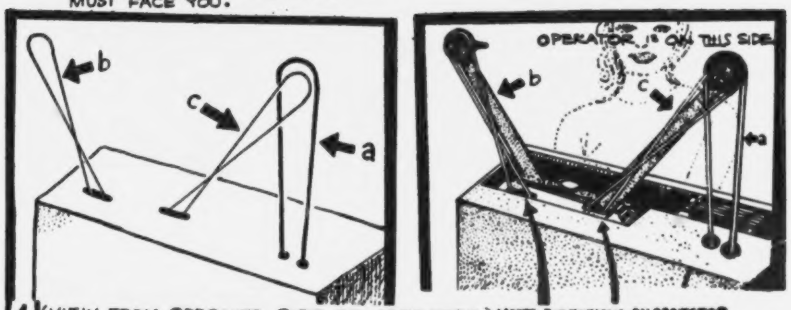
1 REMOVE REEL ARMS FROM LID OF PROJECTOR CASE, OR ON FRONT FLAP.



2 PLACE REEL ARMS (TOP). INSERT BASE OF ARMS UNDER SET SCREW. REEL PIN (ARROW) MUST FACE YOU.



3 TIGHTEN SET SCREW.


b
c
a
OPERATOR IS ON THIS SIDE
b
c
a

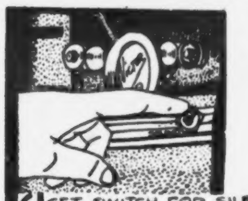
4 (VIEW FROM OPPOSITE SIDE OF OPERATOR) NOTE DIRECTIONS ON PROJECTOR.

A. PULL HEAVY SPRING BELT UP & PLACE OVER LARGE PULLEY AT REAR (a)

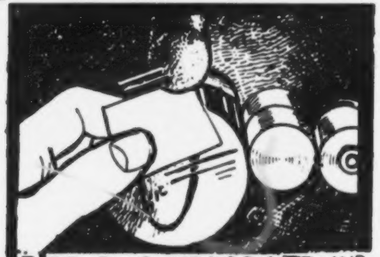
B. PLACE FRONT BELT; TWISTED ONE HALF TURN; ON FRONT PULLEY. (b)

C. PLACE MIDDLE BELT, TWISTED ONE HALF TURN, ON REAR SMALL PULLEY.

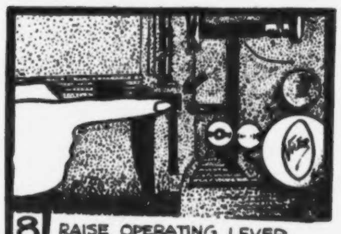
5 PLUG POWER CORD TO OUTLET FROM REAR OF PROJECTOR. PLUG SPEAKER CORD INTO REAR OF PROJECTOR marked.



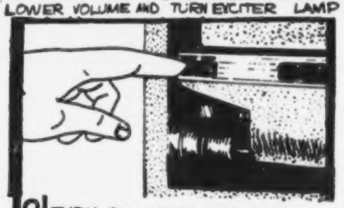
6 SET SWITCH FOR SILENT OR SOUND FILM.



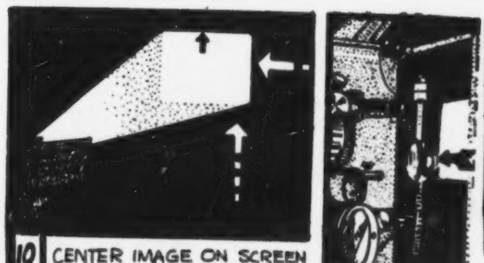
7 TURN ON VOLUME AND EXCITER LAMP SWITCHES (MARKED - REAR OF PROJ.) THEN PASS SMALL CARD BETWEEN EXCITER LAMP AND SOUND DRUM. YOU SHOULD HEAR SOUNDS FROM SPEAKER AS CARD INTERUPTS BEAM & LOWER VOLUME AND TURN EXCITER LAMP OFF.



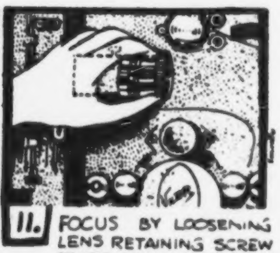
8 RAISE OPERATING LEVER



9 TURN ON MOTOR AND LAMP.

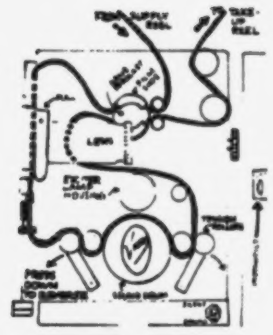


10 CENTER IMAGE ON SCREEN BY MOVING PROJECTOR SIDE TO SIDE AND BY PRESSING "INSTANTILT" TO RAISE AND LOWER IMAGE. (TO OPERATE "INSTANTILT" PRESS BETWEEN THUMB AND FIRST FINGER.)



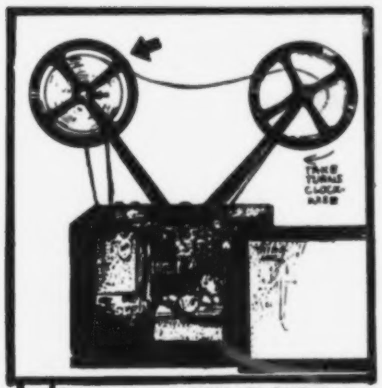
11. FOCUS BY LOOSENING LENS RETAINING SCREW AT TOP OF LENS - THEN SIMPLY TURN LENS BARREL, UNTIL IMAGE ON SCREEN HAS REASONABLY SHARP EDGES.

Threading

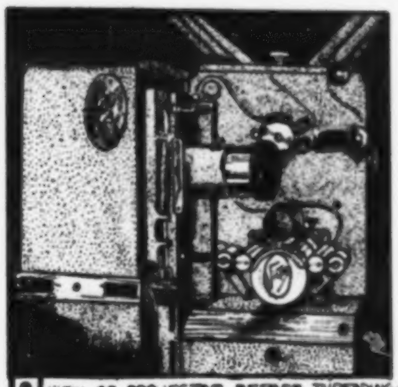


NOMENCLATURE & THREADING DIAGRAM. (ALSO WITH PROJECTOR)

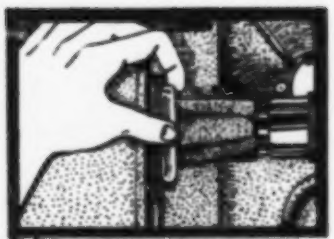
Follow directions in order →



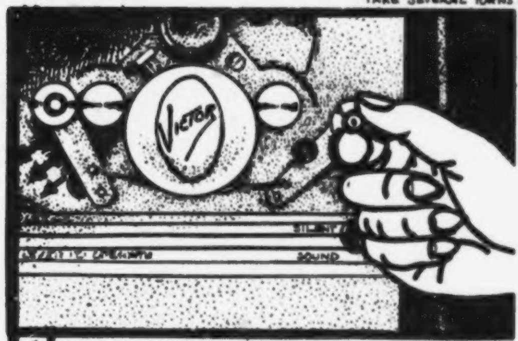
1 PLACE SUPPLY REEL ON REAR ARM. LOCK REEL ON (SMALL ARROW). PLACE TAKE-UP REEL ON FRONT ARM. LEAD FILM FROM TOP OF SUPPLY REEL TO TOP of TAKE UP REEL. TAKE SEVERAL TURNS AS LABELED.



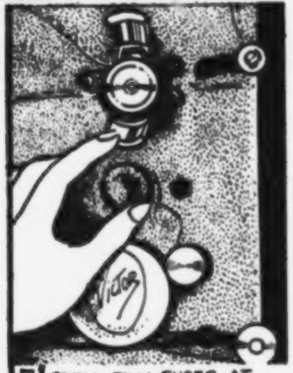
2 VIEW OF PROJECTOR BEFORE THREADING.



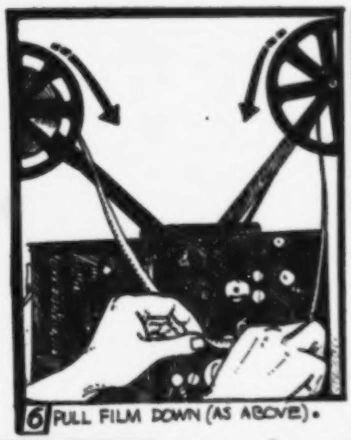
3 PULL TAB MARKED 'PULL' AT REAR OF LENS BARREL. SWING LENS OPEN. STOP SWING WITH THUMB AS INDICATED IN DRAWING.



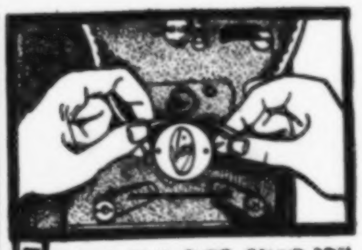
4 OPEN TENSION ROLLERS ON EITHER SIDE OF THE SOUND DRUM.



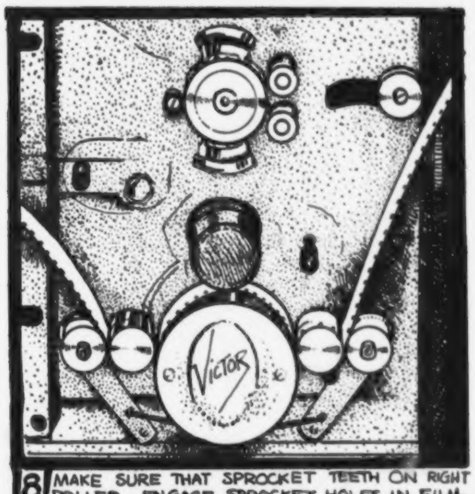
5 OPEN FILM SHOES AT TOP AND BOTTOM OF THE DRIVE SPROCKET.



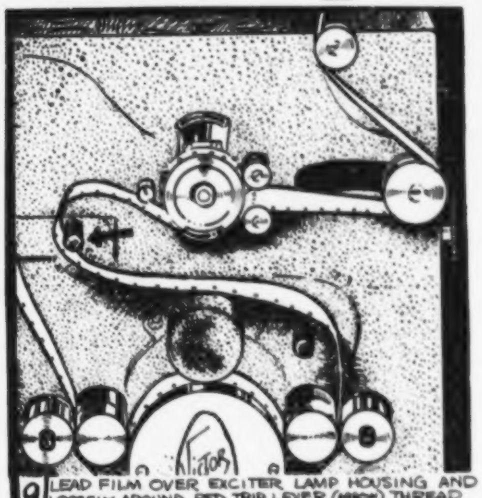
6 PULL FILM DOWN (AS ABOVE).



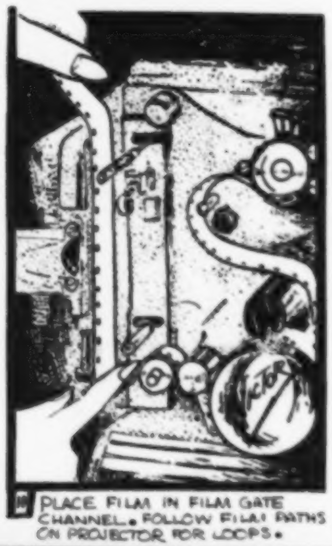
7 THREAD FILM OVER SOUND DRUM AND UNDER ROLLERS ON EITHER SIDE OF SOUND DRUM. (SEE STEP 8).



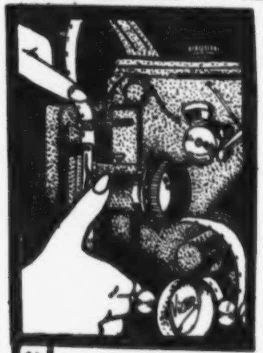
8 MAKE SURE THAT SPROCKET TEETH ON RIGHT ROLLER ENGAGE SPROCKET HOLES IN FILM. CLOSE TENSION ROLLERS (SEE 4). THREADING SO FAR SHOULD LOOK LIKE THIS ILLUSTRATION.



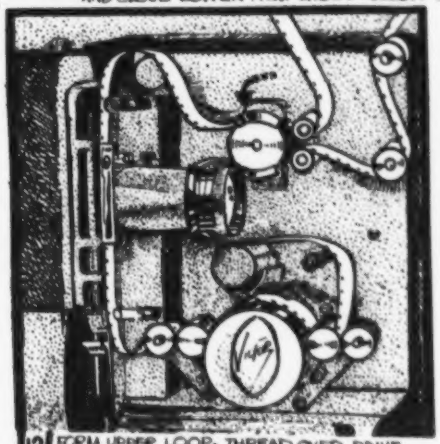
9 LEAD FILM OVER EXCITER LAMP HOUSING AND LOOSELY AROUND RED TRIP LEVER (ARROW) THREAD FILM UNDER DRIVE SPROCKET. ENGAGE TEETH AND CLOSE LOWER FILM SHOE. FOLLOW DRAWING.



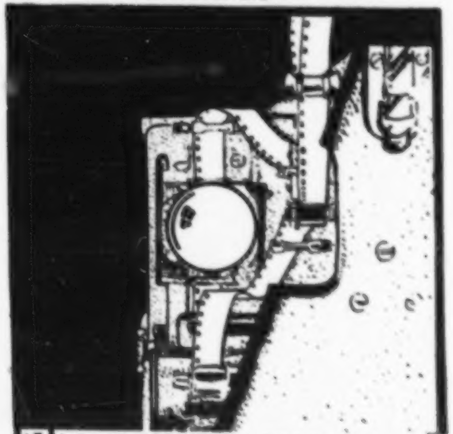
10 PLACE FILM IN FILM GATE CHANNEL. FOLLOW FILM PATHS ON PROJECTOR FOR LOOPS.



11 WHILE HOLDING FILM IN FILM GATE CHANNEL, SWING LENS CLOSED.

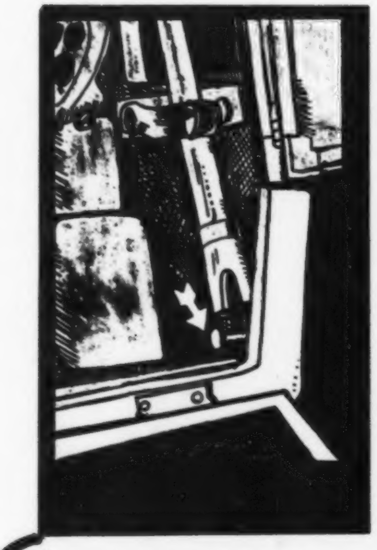


12 FORM UPPER LOOP. THREAD OVER DRIVE SPROCKET, ENGAGING TEETH. CLOSE TOP FILM SHOE. FINAL THREADING SHOULD LOOK LIKE THIS ILLUSTRATION.

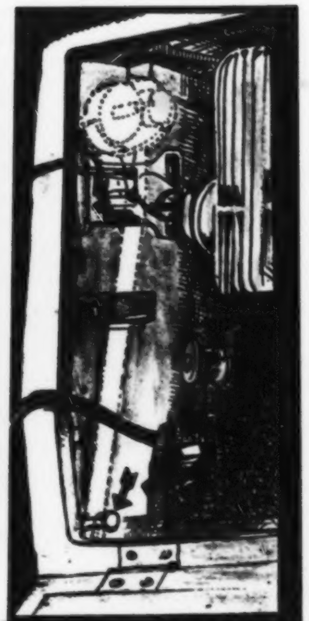


13 DIRECT FRONT VIEW OF PROJECTOR. NOTE THAT FILM PATH CURVES IN AND OUT. PROJECTOR IS NOW THREADED FOR PICTURE AND SOUND.

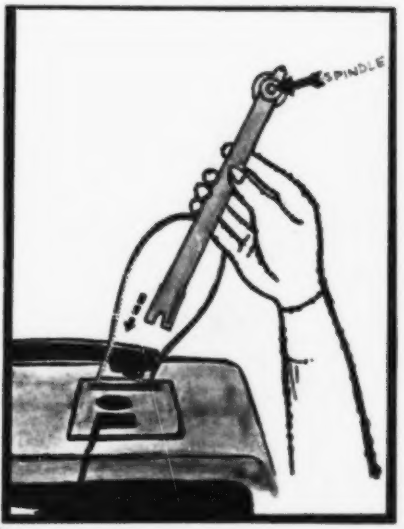
SETTING UP



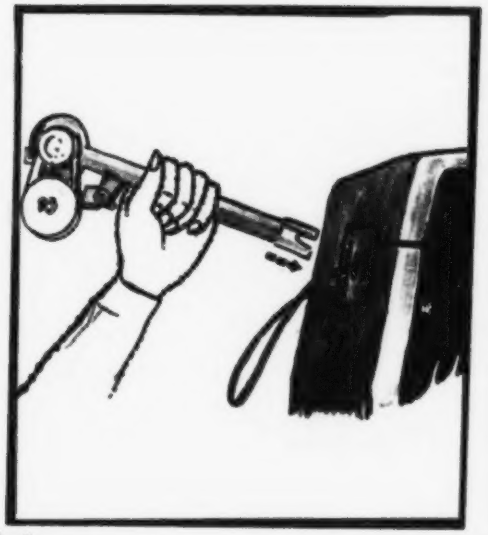
1 FEED REEL ARM IS LOCATED AT FRONT AND INSIDE CASE. NOTE CLAMP AND SOCKET WHICH KEEP IT SECURE.



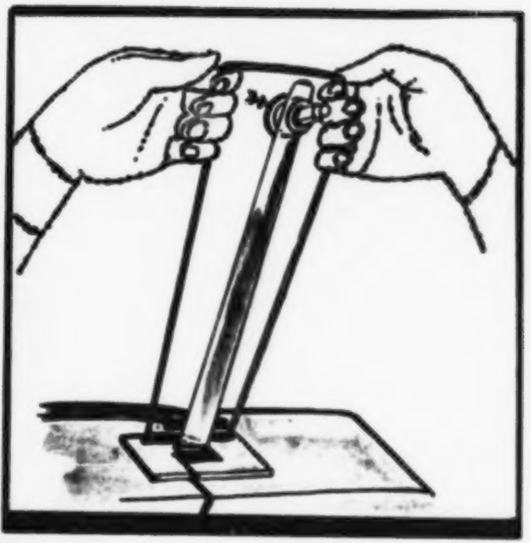
2 TAKE-UP REEL ARM IS LOCATED AT REAR AND INSIDE PROJECTION CASE.



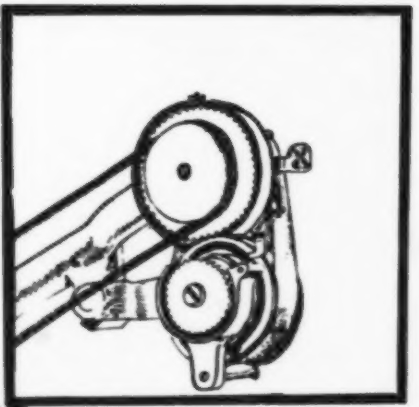
3 PLACE FEED REEL ARM IN SOCKET AT TOP FRONT OF CASE. PRESS DOWN SECURELY SPINDLE SHOULD FACE YOU.



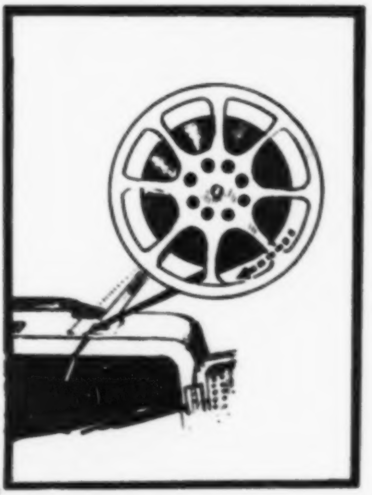
4 PLACE TAKE UP REEL ARM IN SOCKET AT REAR.



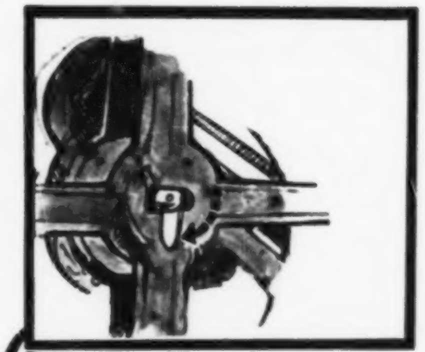
5 PLACE FRONT SPRING BELT (WITHOUT TWISTING) OVER PULLEY AT TOP OF FRONT ARM.



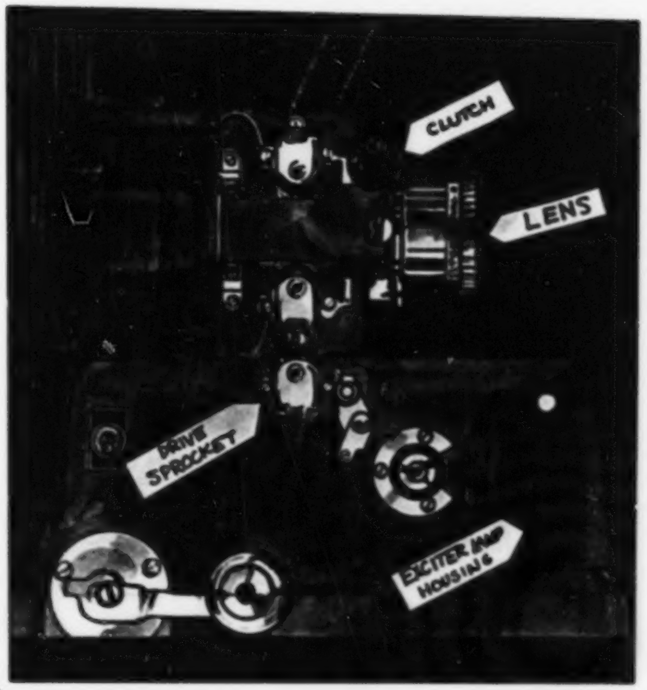
6 PLACE REAR SPRING BELT, WITHOUT TWISTING, OVER REAR PULLEY. THIS DRAWING IS PROPERLY ORIENTED WHEN YOU WALK AROUND REAR OF PROJECTOR AND FACE REAR ARM WITH BELT IMMEDIATLY BEFORE YOU.



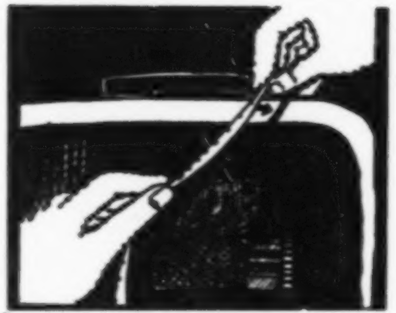
7 RETURN TO OPEN OR PROJECTIONIST SIDE OF CASE. PLACE SUPPLY REEL ON SPINDLE OF FRONT ARM. BE SURE REEL IS SECURE.



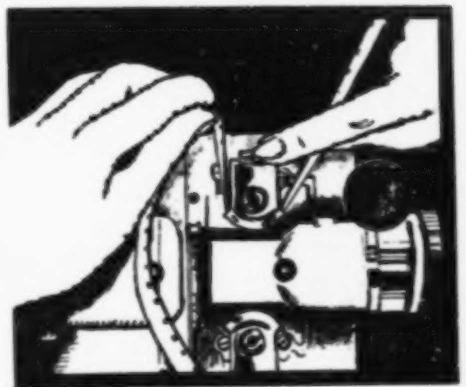
7a PLACE TAKE UP (EMPTY) REEL ON REAR REEL ARM AND LOCK AS INDICATED HERE.



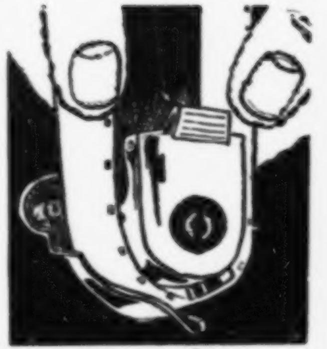
8 AN OVERVIEW OF THREADING AREA.



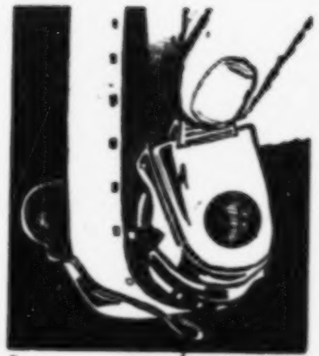
1 PULL A LENGTH OF FILM FROM THE SUPPLY REEL AND FIT IT THROUGH SLOT AT FRONT OF CASE (ARROW)



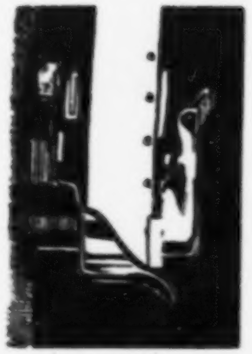
2 THREAD FILM UNDER UPPER DRIVE SPROCKET. (a) PRESS TAB (b) ENGAGE SPROCKET TEETH. WHEN ENGAGED, RELEASE TAB (c). PULL GENTLY ON FILM WITH LEFT HAND TO MAKE SURE SPROCKET TEETH ARE ENGAGED.



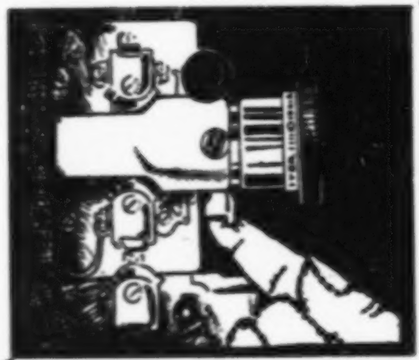
a close up (2)



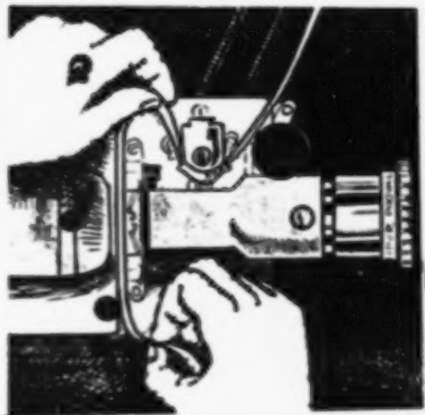
b close up (2)



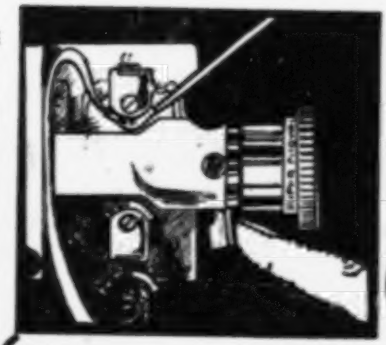
c close up (2)



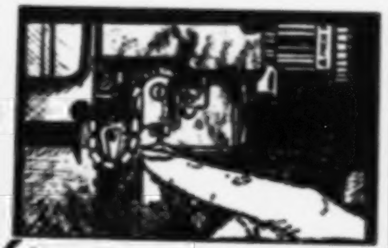
3 SWING FILM GATE LEVER UP AS FAR AS IT WILL GO.



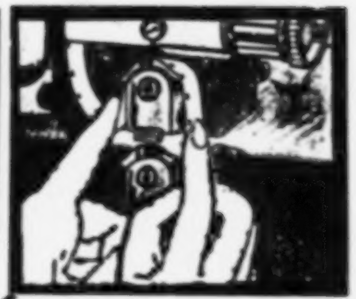
4 FORM TOP LOOP BY FOLLOWING FILM PATH MACHINED ON CASE. PLACE FILM THROUGH FILM GATE. HOLD FILM AS ILLUSTRATED.



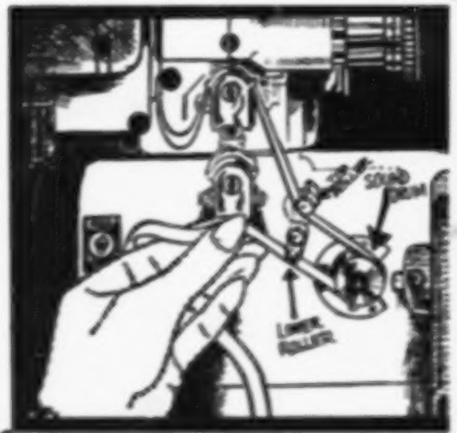
5 CLOSE FILM GATE BY RETURNING FILM GATE LEVER TO ORIGINAL POSITION.



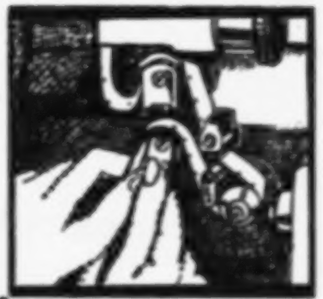
6 NOTE AUTOMATIC LOOP-SETTER. THERE MAY BE A ROUND RUBBER LOOP-SETTER OR NONE AT ALL. IN ANY CASE FOLLOW THE MACHINED FILM PATH. LOOP SIZE IS IMPORTANT FOR PROPER SOUND.



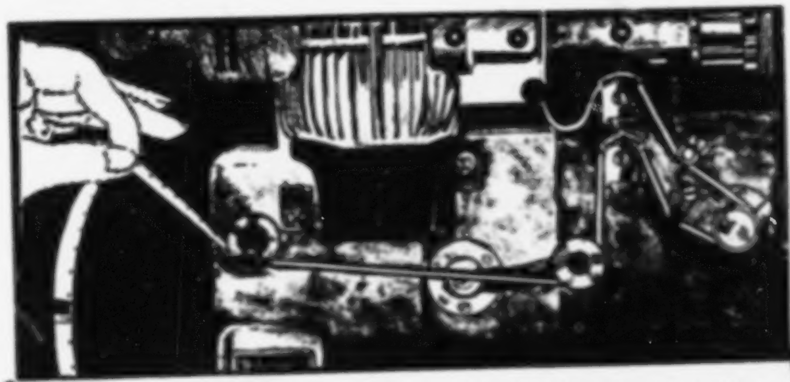
7 COMPLETE FORMATION OF LOOP BY THREADING OVER SECOND SPROCKET. PRESS TAB, ENGAGE TEETH, RELEASE TAB. CHECK WITH STEP TWO.



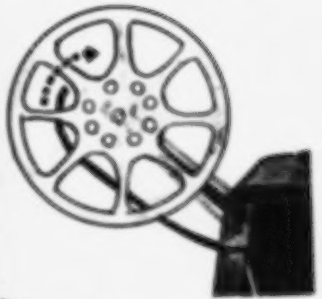
8 LEAD FILM UNDER TOP ROLLER, AROUND SOUND DRUM AND UNDER LOWER ROLLER.



9 THREAD FILM OVER TOP OF LOWER DRIVE SPROCKET. PULL GENTLY ON FILM UNTIL ROLLERS MOVE TO EXTREME POSITIONS. PRESS TAB, ENGAGE TEETH, RELEASE TAB (SEE STEP 2)



10 LEAD FILM UNDER ROLLERS AS ILLUSTRATED HERE.



11 PASS FILM THROUGH SLOT AT REAR OF CASE (ARROW) (OVER GUIDE ROLLER) LEAD FILM AROUND TAKE-UP REEL AND ROTATE TO TAKE UP SLACK.

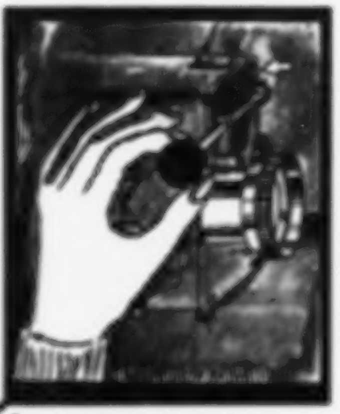
THREADING

PROJECTING SOUND FILMS

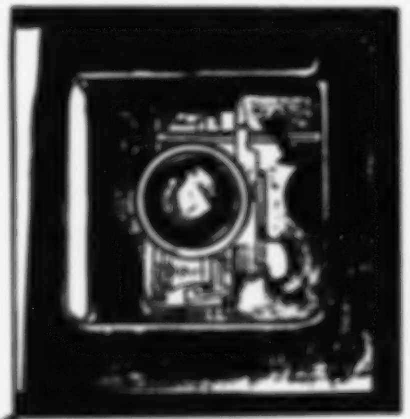
SWITCHES

SET DIRECTION SWITCH AT "FORWARD"

SET SILENT-SOUND SWITCH AT "SOUND"

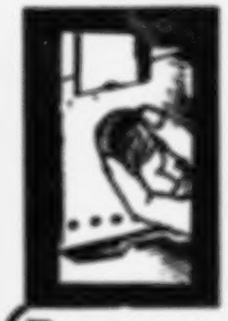


1. TURN CLUTCH KNOB COMPLETELY COUNTER-CLOCKWISE. THIS WILL DISENGAGE PROJECTION MECHANISM.

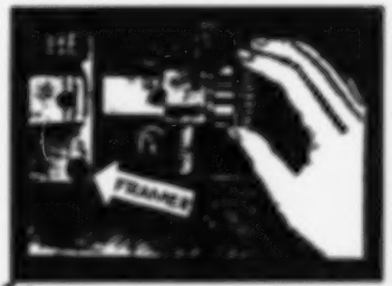


2. TURN THIS KNOB (ARROW) CLOCKWISE TO TURN SPROCKETS MANUALLY. IF FILM ADVANCES PROPERLY, THREADING IS CORRECT.

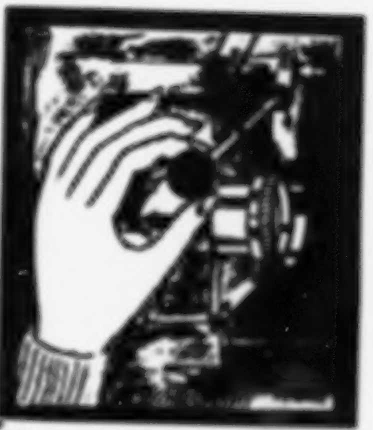
TURN ON AMPLIFIER. ROTATE VOLUME CONTROL ABOUT ONE-QUARTER TURN. TURN ON MOTOR AND LAMP SWITCHES IN ONE CONTINUOUS OPERATION. SINCE PROJECTION MECHANISM HAS BEEN DISENGAGED YOU WILL SEE ONLY ONE PICTURE ON THE SCREEN.



3. CENTER IMAGE (UP OR DOWN) BY ROTATING ELEVATING KNOB AT FRONT OF PROJECTOR. MOVE PROJECTOR SIDE TO SIDE TO CENTER IMAGE HORIZONTALLY.



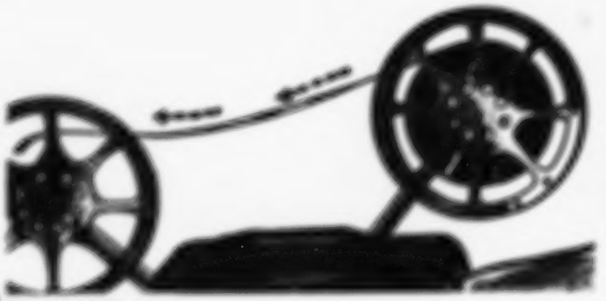
4. FOCUS BY TURNING LENS. IF PORTIONS OF TWO PICTURES APPEAR ON SCREEN, CORRECT BY ROTATING "FRAMER" KNOB.

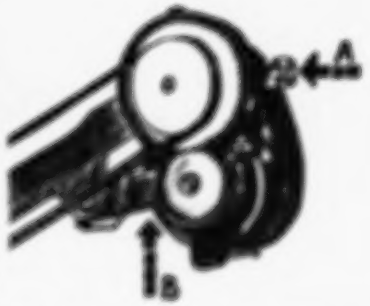


5. ROTATE CLUTCH-CONTROL KNOB CLOCKWISE TO REENGAGE PROJECTION MECHANISM.

PROJECT FILM. ALLOW IT TO RUN COMPLETELY THROUGH BEFORE REWINDING, THEN TURN MOTOR OFF.

NOTE: TURN OFF LAMP AND SOUND WHEN END TITLE APPEARS.





REWIND:

① Reverse reels - Do not Twist.

② Attach end as in illustration above.

③ Mechanism on rear arm should be in position above (bear teeth engaged). Engage teeth by pulling lever (A), lifting arm (B) until teeth engage, release lever (A).

④ Turn on motor switch.

BELL AND HOWELL

[illegible]

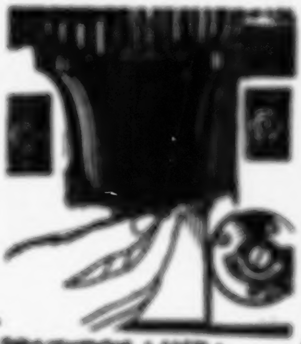
OPERATION

SELF TEACHING CHART

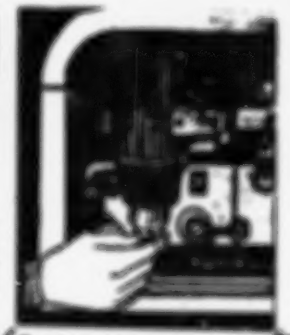
INSTRUCTIONAL MATERIALS

[illegible]

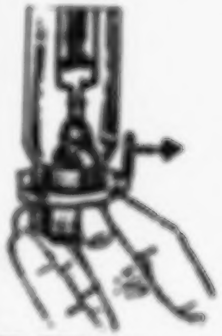
REMOVING AND REPLACING LAMPS



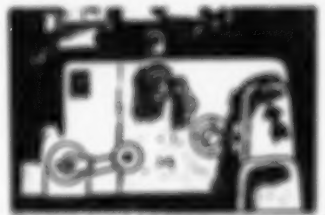
1. PROJECTION LAMP: -WITH PROJECTION SWITCH IN "OFF" POSITION, UNSCREW CAP AT BOTTOM OF LAMP HOUSING.



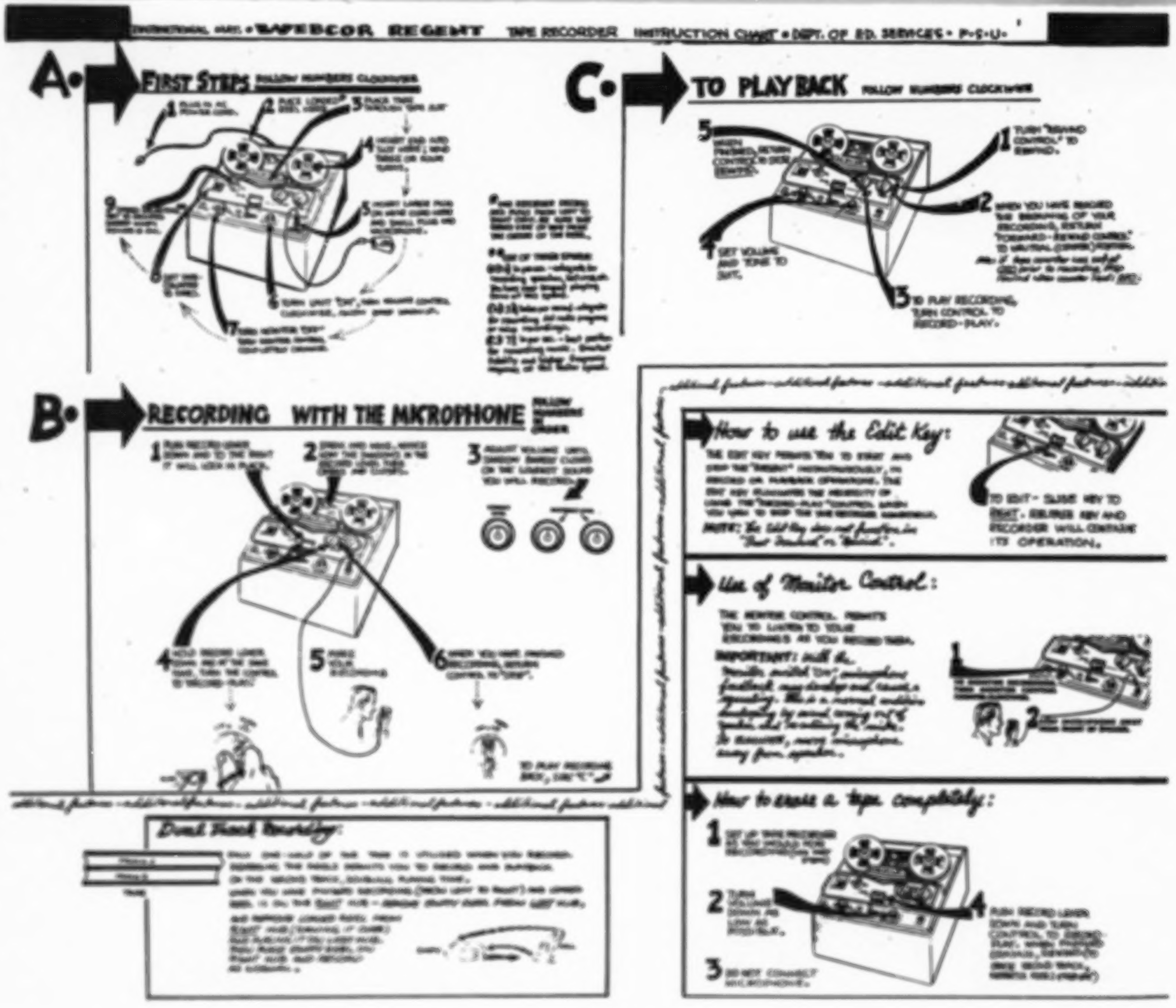
2. BURNED-OUT LAMP WILL SLIDE INTO YOUR HAND. BE SURE LAMP HAS COOLED BEFORE REMOVING.



3. TO REPLACE: BE SURE THAT ARROW ON TONGUE IS TOWARD FRONT OF PROJECTOR (→) FACE UP, REVOLVE SLIGHTLY EACH WAY UNTIL LAMP SETTLES INTO SLOT AT BOTTOM OF LAMP HOUSING



EXCITER LAMP: [illegible]



WEBCOR REGENT TAPE RECORDER INSTRUCTION CHART • DEPT. OF ED. SERVICES • P•S•U•

A• FIRST STEPS FOLLOW NUMBERS CLOCKWISE

1 PLUG IN AC POWER CORD.

C• TO PLAYBACK FOLLOW NUMBERS CLOCKWISE

1 TURN "REWIND CONTROL" TO REWIND.

2 WHEN YOU HAVE REACHED THE BEGINNING OF YOUR RECORDING, RETURN "FORWARD-REWIND CONTROL" TO NEUTRAL (CENTER) POSITION.

3 TO PLAY RECORDING, TURN CONTROL TO RECORD-PLAY.

4 SET VOLUME AND TONE TO SUIT.

5 WHEN FINISHED, RETURN CONTROL TO OFF POSITION.

B• RECORDING WITH THE MIKROPHONE FOLLOW NUMBERS IN ORDER

1 PUSH RECORD LEVER DOWN AND TO THE RIGHT IT WILL LOCK IN PLACE.

5 MAKE YOUR RECORDING.

6 WHEN YOU HAVE FINISHED RECORDING, RETURN CONTROL TO "OFF".

TO PLAY RECORDING BACK, SEE "C."

additional features – additional features – additional features

How to use the Edit Key:

THE EDIT KEY PERMITS YOU TO START AND STOP THE "REGENT" INSTANTANEOUSLY, IN RECORD OR PLAYBACK OPERATIONS.

NOTE: The Edit Key does not function in "Fast Forward" or "Rewind".

TO EDIT – SLIDE KEY TO RIGHT. RELEASE KEY AND RECORDER WILL CONTINUE ITS OPERATION.

Use of Monitor Control:

THE MONITOR CONTROL PERMITS YOU TO LISTEN TO YOUR RECORDINGS AS YOU RECORD THEM.

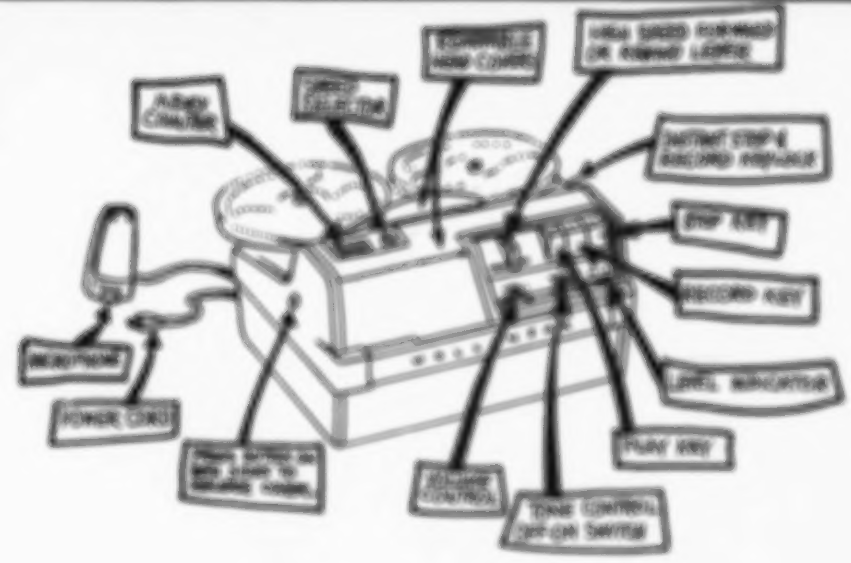
IMPORTANT:

How to erase a tape completely:

3 DO NOT CONNECT MICROPHONE.

Dual Track Recording:

WOLLENSAK TAPE RECORDER INSTRUCTIONS


INDEX COUNTER
SPEED SELECTOR
[illegible] HEAD COVER
HIGH SPEED FORWARD OR REWIND LEVER
INSTANT STOP & RECORD KEY LOCK
STOP KEY
RECORD KEY
LEVEL INDICATOR
PLAY KEY
TONE CONTROL OFF-ON SWITCH
VOLUME CONTROL
[illegible]
POWER CORD
MICROPHONE

DUCATIONAL SERVICES #3
DEPARTMENT OF EDUCATIONAL SERVICES
INSTRUCTIONAL MATERIALS SECTION,
PENNSYLVANIA STATE UNIVERSITY,
UNIVERSITY PARK, PENNA.

TO MAKE A MICROPHONE RECORDING

1. **CONNECT POWER CORD** TO OUTLET* AND POWER SOCKET IN REAR OF MACHINE. REWIND LEVER MUST BE IN CENTER POSITION. TURN ON POWER BY TURNING **TONE CONTROL KNOB.**

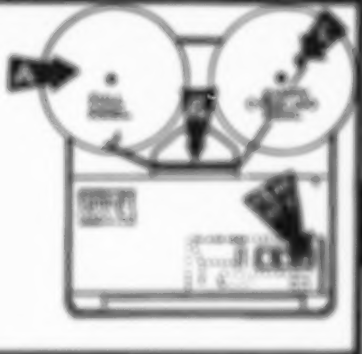
* [illegible]

2. **THREAD RECORDER**

(A) PRESS STOP KEY – PLACE FULL REEL ON LEFT SPINDLE (GLOSSY SIDE OUT).

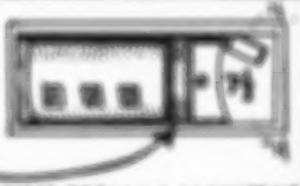
(B) STRETCH TAPE IN LINE WITH THREADING SLOT, AND LOWER IT INTO PLACE.

(C) ATTACH END OF TAPE TO EMPTY (TAKE-UP) REEL.

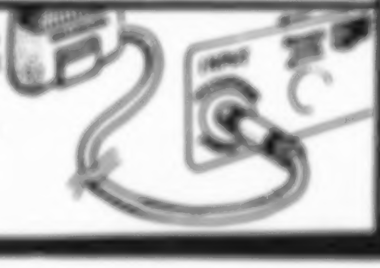


3. **SELECT SPEED** ([illegible]) [illegible] 7½ [illegible] 3¾ [illegible]

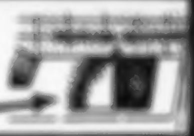
SET INDEX COUNTER TO ZERO BY TURNING BACK ITS KNURLED KNOB. THIS ENABLES YOU TO RETURN TO EXACT BEGINNING OF RECORDING.



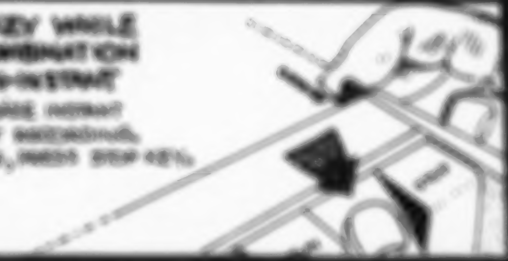
4. **INSERT MIKE PLUG** FIRMLY INTO MICROPHONE INPUT JACK (REAR OF RECORDER). SWITCH MUST BE IN MICROPHONE POSITION AS SHOWN.



5. **SET RECORD LEVEL** – TURN TONE CONTROL TO TREBLE, WHILE TALKING INTO MICROPHONE, ADJUST VOLUME CONTROL UNTIL THE [illegible] HALF OF THE INDICATOR FLASHES AND NO FLASHING OCCURS ON THE [illegible] HALF (AS SHOWN).



6. **PRESS RECORD KEY WHILE PULLING BACK COMBINATION RECORD KEY LOCK-INSTANT STOP LEVER.** RELEASE INSTANT STOP LEVER TO START RECORDING. AT END OF RECORDING, PRESS STOP KEY.



TO PLAY BACK RECORDINGS

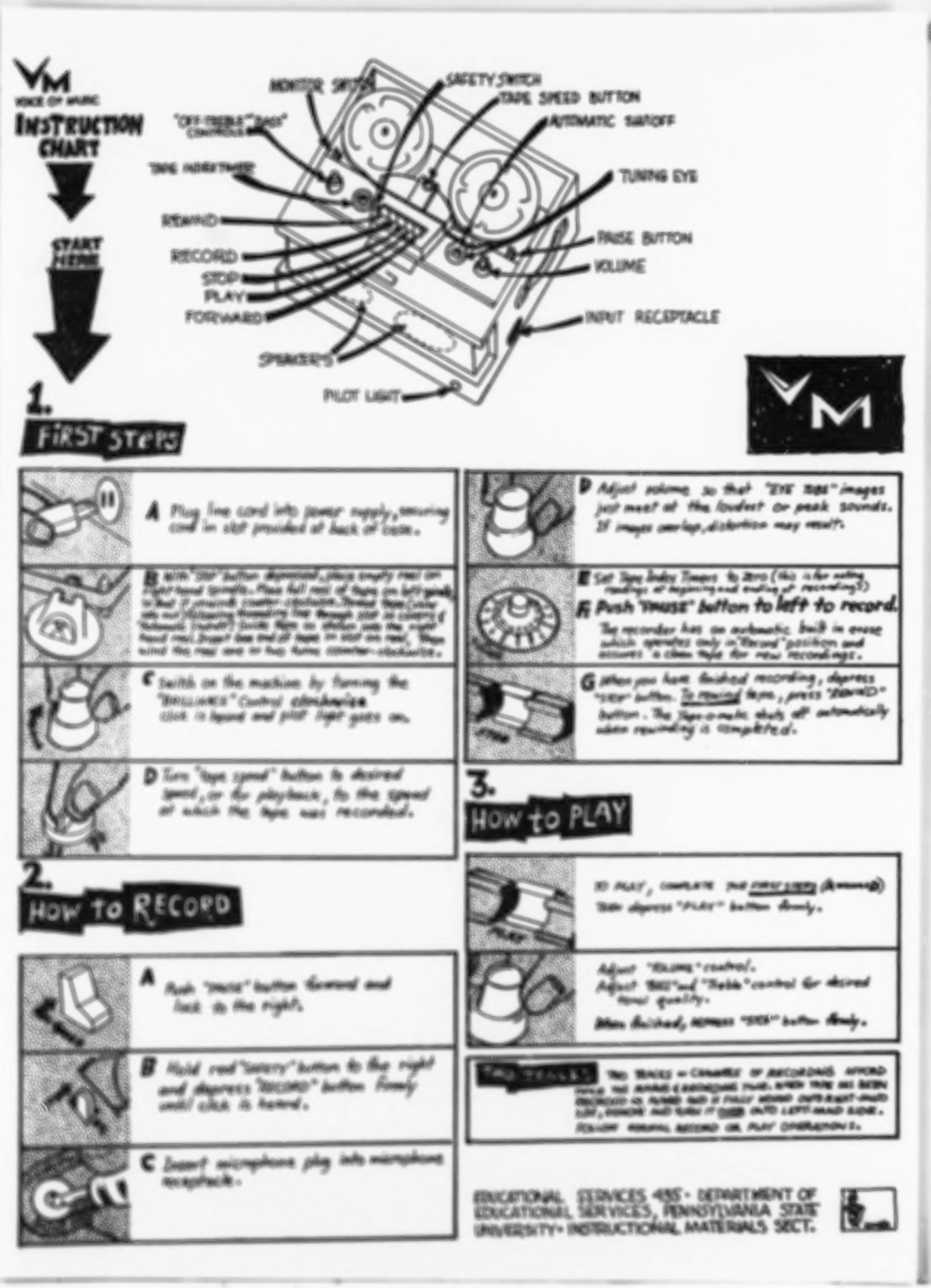
1. **REWIND TAPE** BY MOVING HIGH SPEED LEVER TO THE LEFT. RETURN LEVER TO CENTER POSITION TO STOP TAPE WHEN INDEX COUNTER NEARS ZERO.

2. **PRESS PLAY KEY** AND ADJUST TONE AND VOLUME TO SUIT.

RECORDING FROM RADIO, TV, PHONOGRAPH

[illegible]

a. SET RECORDING LEVEL ([illegible])
b. SET INDEX COUNTER (STEP 3.)
c. [illegible]
d. [illegible]
[illegible]


VM
VOICE OF MUSIC
START HERE
MONITOR SWITCH
SAFETY SWITCH
TAPE SPEED BUTTON
AUTOMATIC SHUTOFF
"OFF-TREBLE"-"BASS" CONTROLS
TAPE INDEX TIMER
TUNING EYE
REWIND
RECORD
STOP
PLAY
FORWARD
PAUSE BUTTON
VOLUME
INPUT RECEPTACLE
SPEAKERS
PILOT LIGHT
VM

INSTRUCTION CHART

1. FIRST STEPS

A Plug line cord into power supply, securing cord in slot provided at back of case.

B With "stop" button depressed, place empty reel on right-hand spindle. Place full reel of tape on left spindle so that it unwinds counter-clockwise. Thread tape (shiny side out) following threading line through slot in covering of "Automatic Shutoff" (Guide tape as shown) onto the right hand reel. Insert free end of tape in slot on reel. Then wind the reel one or two turns counter-clockwise.

C Switch on the machine by turning the "BRILLIANCE" Control clockwise click is heard and pilot light goes on.

D Turn "tape speed" button to desired speed, or for playback, to the speed at which the tape was recorded.

2. HOW TO RECORD

A Push "PAUSE" button forward and lock to the right.

B Hold red "safety" button to the right and depress "RECORD" button firmly until click is heard.

C Insert microphone plug into microphone receptacle.

D Adjust volume so that "EYE TUBE" images just meet at the loudest or peak sounds. If images overlap, distortion may result.

E Set Tape Index Timer to zero (this is for noting readings of beginning and ending of recordings!)

F **Push "PAUSE" button to left to record.**

The recorder has an automatic built in erase which operates only in "Record" position and assures a clean tape for new recordings.

G When you have finished recording, depress "STOP" button. To rewind tape, press "REWIND" button. The Tape-o-matic shuts off automatically when rewinding is completed.

3. HOW TO PLAY

TO PLAY, COMPLETE THE FIRST STEPS (A——D)
Then depress "PLAY" button firmly.

Adjust "VOLUME" control.
Adjust "BASS" and "Treble" control for desired tonal quality.
When finished, depress "STOP" button firmly.

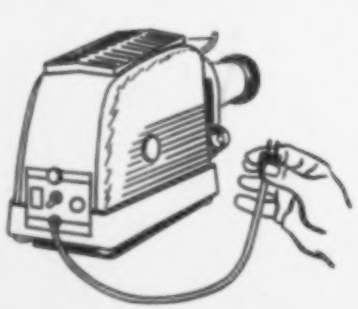
TWO TRACKS TWO TRACKS = CAPABLE OF RECORDINGS AFFORD TWICE THE NORMAL RECORDING TIME. WHEN TAPE HAS BEEN RECORDED AS ABOVE AND IS FULLY WOUND ONTO RIGHT-HAND REEL, REMOVE AND TURN IT OVER ONTO LEFT-HAND SIDE. FOLLOW NORMAL RECORD OR PLAY OPERATIONS.

EDUCATIONAL SERVICES 455 · DEPARTMENT OF
EDUCATIONAL SERVICES, PENNSYLVANIA STATE
UNIVERSITY · INSTRUCTIONAL MATERIALS SECT.

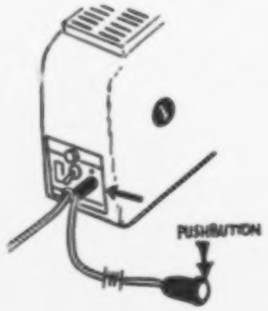
OPERATING INSTRUCTIONS VICTOR SOUNDVIEW

REMOTE CONTROL PUSHBUTTON PROJECTOR

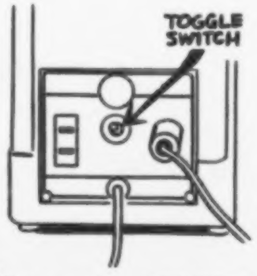
DEPARTMENT OF EDUCATIONAL SERVICES/INSTRUCTIONAL MATERIALS SECTION
THE PENNSYLVANIA STATE UNIVERSITY, UNIVERSITY PARK, PA.
EDUCATIONAL SERVICES 435 — BURROWES BUILDING



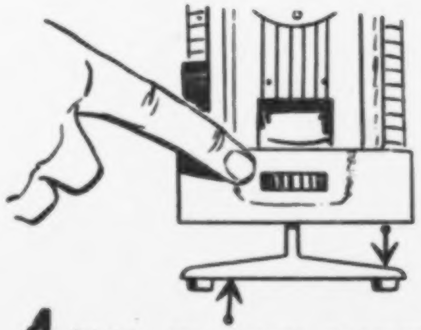
1: PLUG PROJECTOR POWER LINE INTO WALL OUTLET (AC CURRENT ONLY).



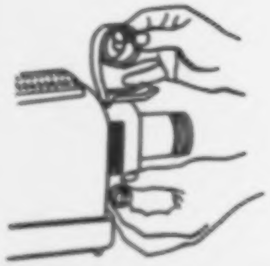
2: PLUG PUSHBUTTON CORD INTO PROJECTOR.



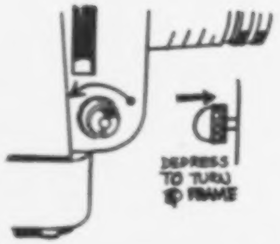
3: TURN ON PROJECTOR TOGGLE SWITCH.



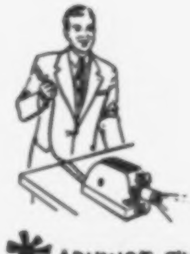
4. RAISE OR LOWER PROJECTOR BY TURNING TILT KNOB ON FRONT OF PROJECTOR.



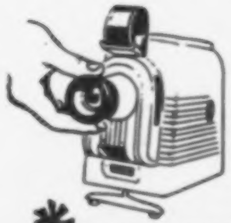
5: THREAD FILM BETWEEN APERTURE PLATES UNTIL YOU ENGAGE SPROCKET TEETH.


DEPRESS TO TURN TO FRAME

6: DEPRESS KNOB AND ROTATE COUNTER-CLOCKWISE TO STARTING FRAME. TO LOCK IN POSITION, RELEASE KNOB.

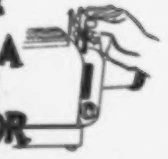


* ADVANCE FILM BY DEPRESSING AND RELEASING PUSHBUTTON.



* FOCUS PICTURE BY ROTATING LENS RIGHT OR LEFT.

TO USE AS A SLIDE PROJECTOR

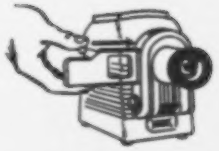


REMOVE FILM GUIDE AND APERTURE PLATES.

* FIRST REMOVE APERTURE PLATES CAREFULLY AND ONE AT A TIME. THEN REMOVE APERTURE HOUSING. MAKE SURE THAT GLASS PLATES ARE FREE OF DIRT AND FINGERPRINTS WHEN REPLACING.

* REPLACE APERTURE HOUSING FIRST, THEN APERTURE PLATES. (GLASS SIDE TO FACE GLASS SIDE)

* detach pushbutton cord

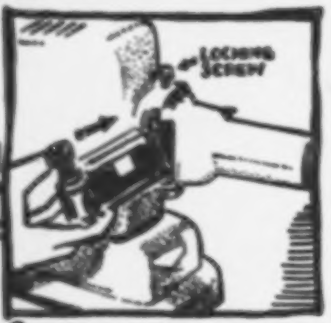


MAKE SURE KNOB OF SLIDE CARRIER FACES FRONT OF PROJECTOR, SLIDE IN AS ILLUSTRATED.

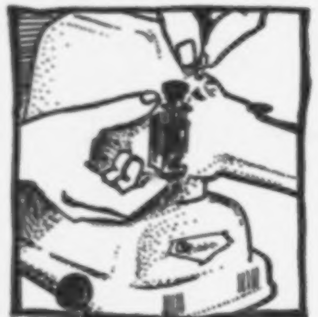
VIEWLEX SLIDE AND FILMSTRIP PROJECTOR INSTRUCTION CHART/SELF-TEACHING

DEPARTMENT OF EDUCATIONAL SERVICES THE PENNSYLVANIA STATE UNIVERSITY
INSTRUCTIONAL MATERIALS
J.O. SERVAIS

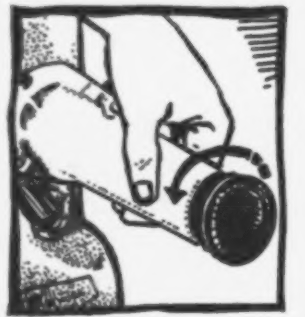
TO USE AS A FILM STRIP PROJECTOR



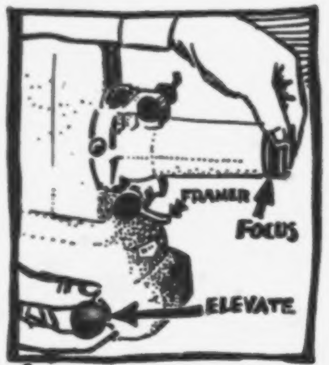
1. ROTATE NOSE PIECE OF PROJECTOR SO THAT SLOT IS FACING OPERATOR (ON RIGHT SIDE) AS HE FACES SCREEN. LOOSEN LOCKING SCREW, INSERT FILMSTRIP ATTACHMENT.



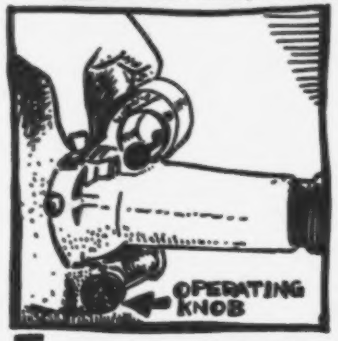
2. PUSH FILMSTRIP ATTACHMENT IN FULLY, THEN TIGHTEN LOCKING SCREW.



3. ROTATE NOSE-PIECE TO ORIGINAL POSITION. PLUG PROJECTOR IN. TURN ON MOTOR AND LAMP SWITCHES AT REAR OF PROJECTOR. (LAMP WILL NOT TURN ON UNLESS BLOWER MOTOR IS ON.)



4. FOCUS AND ELEVATE IMAGE TO CORRECT PLACEMENT ON SCREEN.



5. PLACE FILMSTRIP OVER SPOOL ON NOSE-PIECE. INSERT FILMSTRIP BETWEEN APERTURE PLATES AND PUSH DOWN UNTIL RESISTANCE IS MET. TURN OPERATING KNOB COUNTER-CLOCKWISE TO ENGAGE SPROCKETS.

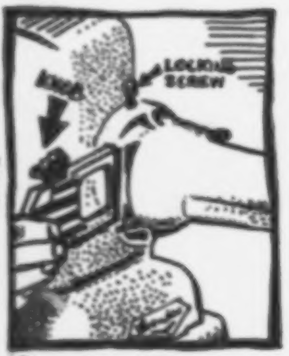
6. REFINE FOCUS ON FIRST FRAME (see illust. #4) AND IF MORE THAN ONE PICTURE APPEARS ON SCREEN, "FRAME" IT BY MOVING FRAMER ARM UP OR DOWN (see illust. #4)

7. TURN OPERATING KNOB COUNTER-CLOCKWISE TO ADVANCE FILM (see illust. #5)

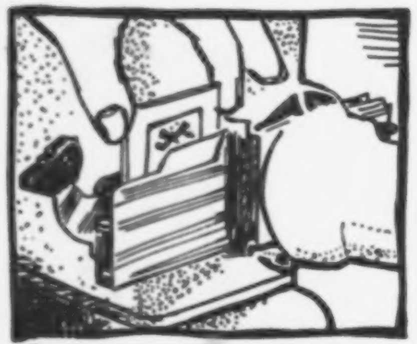
WHEN LAST PICTURE APPEARS, TURN OFF LAMP. THEN TURN OFF BLOWER.

8. FINISH TURNING FILMSTRIP THROUGH. REWIND IT (TAKING CARE NOT TO SCRATCH OR FINGERPRINT IT (HANDLE BY EDGES), LOOSEN LOCKING SCREW AND REMOVE FILMSTRIP ATTATCHMENT. IT IS NOW READY TO INSERT SLIDE CARRIER.

TO USE AS A SLIDE PROJECTOR



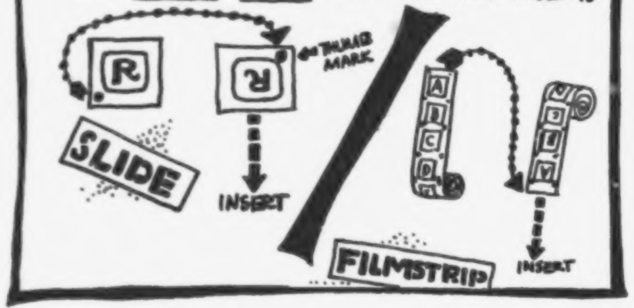
1. INSERT SLIDE CARRIER IN FULLY (KNOB TO BE ON OPERATOR'S SIDE) TIGHTEN LOCKING SCREW.



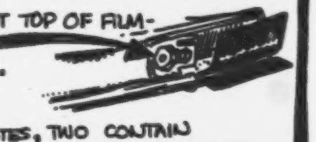
2. PLACE SLIDE IN CARRIER SLOT. PUSH KNOB IN FULLY. INSERT NEXT SLIDE IN SLOT AT OPPOSITE SIDE AND WHEN KNOB IS PULLED TOWARD OPERATOR, SECOND SLIDE WILL BE PROJECTED.

* TO INSERT TRANSPARENCY (SLIDE OR FILMSTRIP) SO THAT IT PROJECTS PROPERLY,

HOLD IT UP TO LIGHT SO THAT IT APPEARS AS YOU WANT IT PROJECTED, THEN TURN IT (WITHOUT FLIPPING) TO ITS UPSIDE DOWN POSITION AND INSERT.



* TO PROJECT A DOUBLE FRAME FILMSTRIP:



1 PRESS SPRING NUT AT TOP OF FILM-STRIP ATTACHMENT THIS UNLOCKS PLATES. REMOVE PLATES.

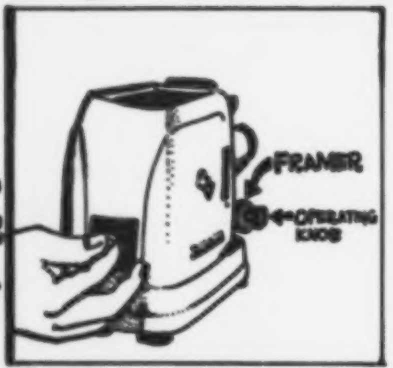
2 OF THE THREE PLATES, TWO CONTAIN GLASS COVERINGS, — REMOVE THE SMALL-AREA MASK (WHICH CONTAINS NO GLASS). PUT IT ASIDE. REPLACE PLATES (GLASS FACING GLASS) INTO FILMSTRIP ATTACHMENT. (MAKING SURE THAT THEY ARE POSITIONED SO THAT FILMSTRIP ATTACHMENT ITSELF WILL FIT INTO LENS BARREL OPENING.) SEE DRAWING NO. 1 AT TOP OF PAGE.

3 INSERT FILMSTRIP ATTACHMENT AS IN DRAWING NO. 1 AT TOP OF PAGE AND LOCK. LEAVE LENS BARREL IN THIS POSITION. PROJECT FILMSTRIP.

SVE GRAFLEX INSTRUCTION CHART

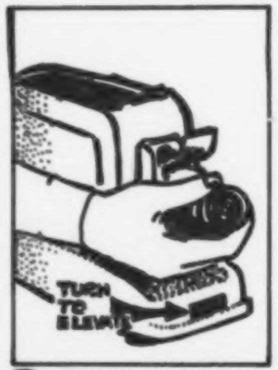
/ DEPT. OF EDUCATIONAL SERVICES / INSTRUCTIONAL MATERIALS SECT. / THE PENNSYLVANIA STATE UNIVERSITY / [illegible] / PREPARED FOR SELF-TEACHING ED. SERV. 435 /

TO USE AS A FILMSTRIP PROJECTOR

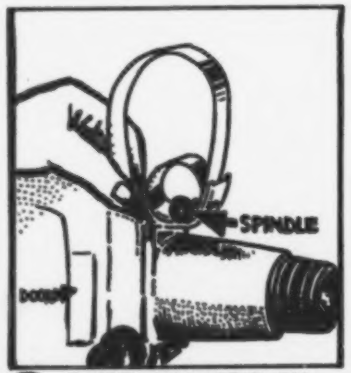


1. PLUG PROJECTOR IN. TURN ON SWITCH (ILLUST.)
NOTE: *FRAMER* IS LARGE KNURLED KNOB INSIDE FROM OPERATING KNOB. TURN TO FRAME.

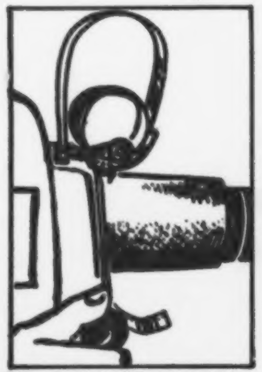
* YOU WILL HAVE REMOVED SLIDE CARRIER BY LOOSENING LOCKING SCREW AND PULLING IT OUT RIGHT SIDE.



2. FOCUS ROUGHLY AFTER ELEVATING IMAGE TO CORRECT HEIGHT ON SCREEN.



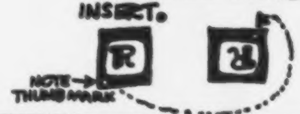
3. PLACE FILMSTRIP ON SPINDLE. INSERT IN OPENING, PUSH IN GENTLY UNTIL YOU FEEL SPROCKETS ENGAGE SPROCKET HOLES.
MAKE SURE SIDE DOORS ARE CLOSED.



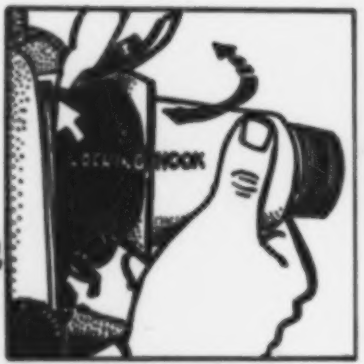
4. TURN OPERATING KNOB CLOCKWISE. WHEN FIRST FRAME APPEARS, REFINE FOCUS. IF MORE THAN ONE COMPLETE PICTURE APPEARS, FRAME IT (SEE *1).

5. VIEW FILMSTRIP. TURN PROJECTOR OFF.
REWIND FILMSTRIP TAKING CARE NOT TO LEAVE FINGERPRINTS OR SCRATCHES.

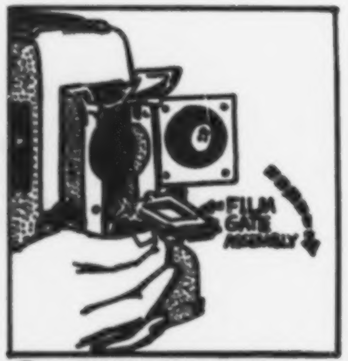
NOTE: TO INSERT SLIDE OR FILMSTRIP SO THAT IT PROJECTS PROPERLY,
– HOLD TRANSPARENCY UP TO LIGHT SO THAT IT APPEARS NORMAL – THEN TURN IT (WITHOUT FLIPPING) TO THE UPSIDE DOWN POSITION AND INSERT.



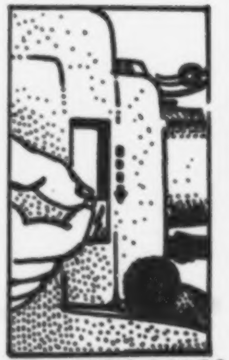
TO USE AS A SLIDE PROJECTOR



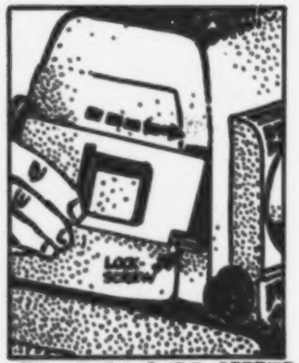
1. SWING LENS BARREL ASSEMBLY OPEN.



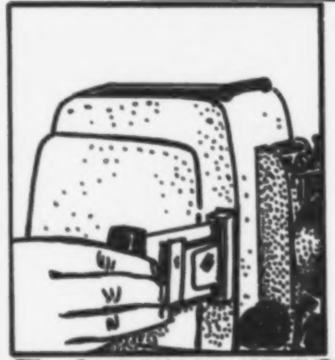
2. GRASP FILM GATE ASSEMBLY AND SWING DOWN (DOTTED ARROW). CLOSE LENS BARREL ASSEMBLY.



3. OPEN DOORS ON BOTH SIDES OF PROJECTOR.



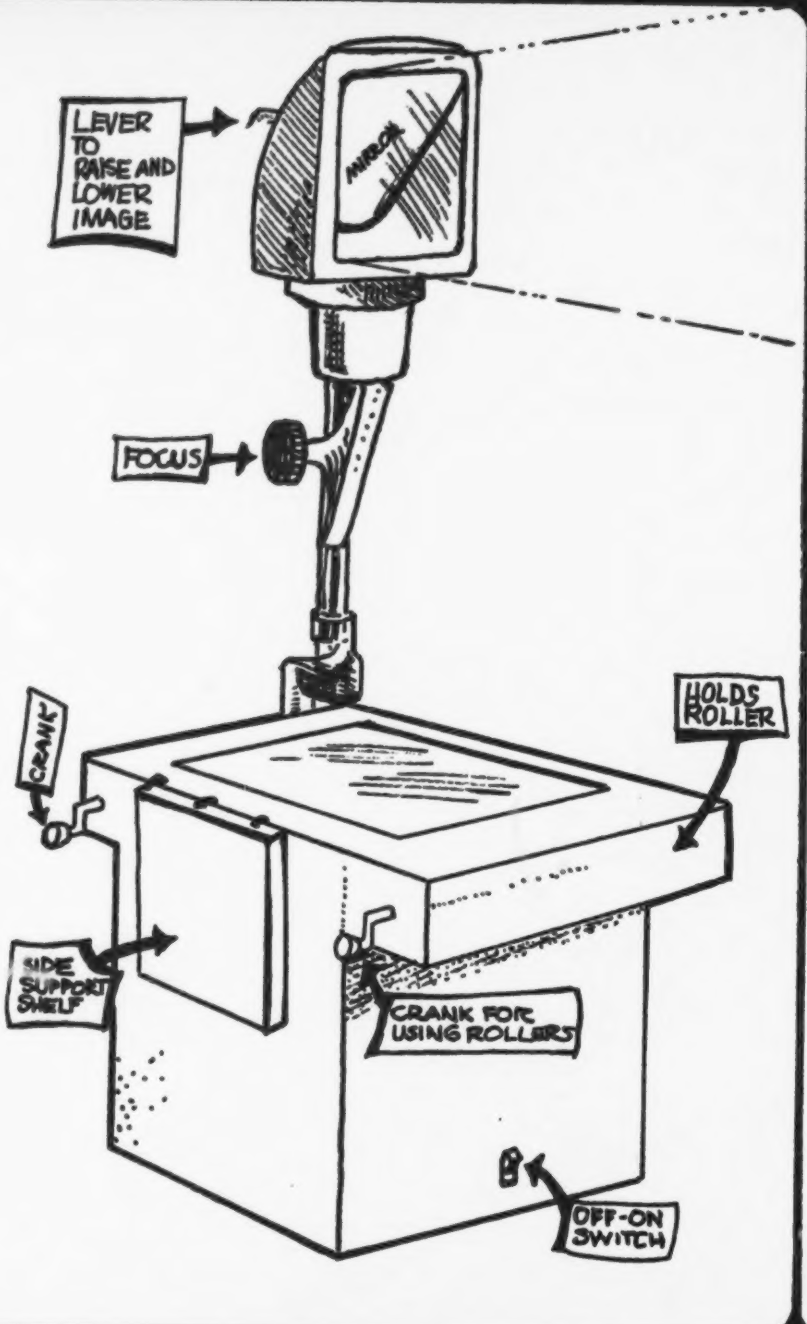
4. PUSH SLIDE CARRIER IN RIGHT SIDE. SECURE IT BY TIGHTENING LOCKING SCREW ON OPPOSITE SIDE.

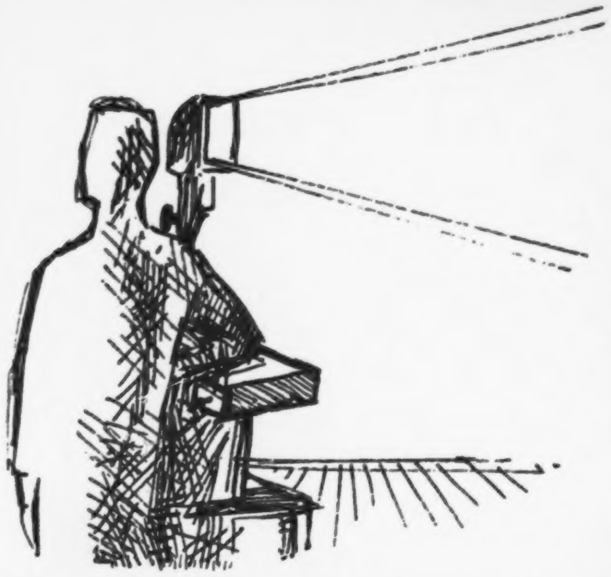


NOTE: PLACE SLIDE IN FRONT SLOT OF SLIDE CARRIER

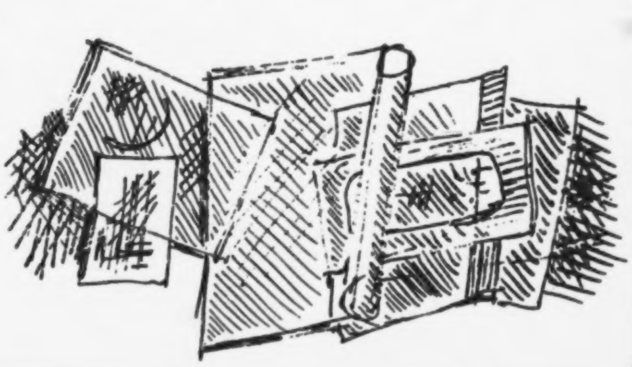
5. CAUTION: DO NOT TURN ON LAMP UNTIL SLIDE IS IN PLACE.
TURN OFF WHILE LAST SLIDE IS IN PLACE.
PULL OUT PLUNGER, INSERT SLIDE.
PUSH PLUNGER IN AND OUT IN ONE OPERATION.
(SLIDE WILL REMAIN INSIDE FOR PROJECTION)
THEN INSERT NEXT SLIDE – PLUNGE IN AND OUT – THE FIRST SLIDE WILL COME OUT OPPOSITE SIDE.
TO REMOVE LAST SLIDE, PUSH PLUNGER IN & OUT.

THE OVERHEAD PROJECTOR


LEVER TO RAISE AND LOWER IMAGE
MIRROR
FOCUS
CRANK
HOLDS ROLLER
SIDE SUPPORT SHELF
CRANK FOR USING ROLLERS
OFF-ON SWITCH



THE OPERATOR FACES THE CLASS AND WRITES NORMALLY USING SOME KIND OF A GREASE PENCIL ON ACETATE SHEETS OR A ROLL OF CELLOPHANE. HE CAN ALSO USE PRE-MADE OVERLAYS OR COMMERCIAL OVERLAYS, OPERATIONAL SLIDES OR WHATEVER.



SOME ADVANTAGES

- YOU MAY USE A LIGHTED ROOM.
- YOU FACE THE CLASS.
- YOU CAN USE MATERIAL AGAIN AND AGAIN.
- WITH THE PROPER ATTACHMENTS YOU CAN PROJECT SLIDES AND FILMSTRIPS.
- IT IS QUIET AND SIMPLE TO OPERATE

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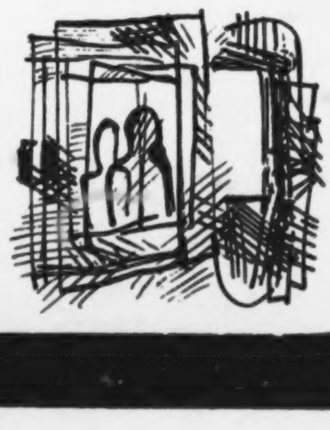

THE BESELER SLIDE PROJECTOR

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EDUCATIONAL
SERVICES 435
INSTRUCTIONAL
MATERIALS SECTION
DEPARTMENT of
EDUCATIONAL
SERVICES.

① PLUG PROJECTOR IN.
② TURN PROJECTOR ON.
③ CENTER IMAGE ON SCREEN. (FIG. II)
④ TURN BLACK KNOB (FIG. I) TO EXTEND OR CLOSE BELLOWS THUS FOCUSING IMAGE ROUGHLY.
⑤ TURN PROJECTOR OFF.

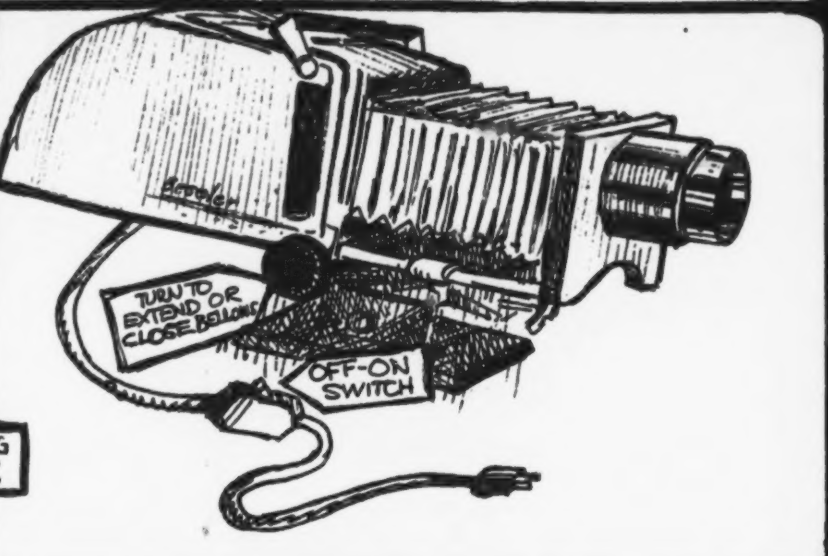
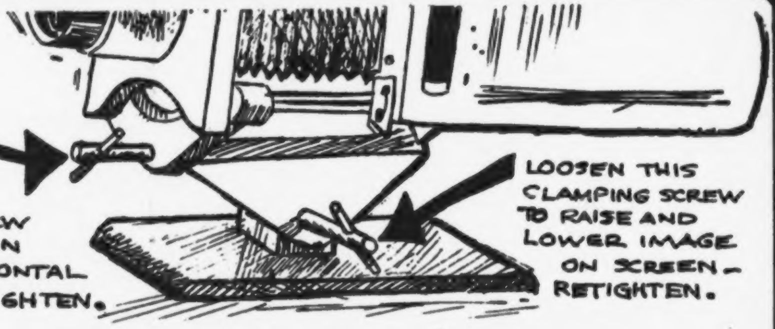

beseler
TURN TO EXTEND OR CLOSE BELLOWS
OFF-ON SWITCH

FIG I



LOOSEN THIS CLAMPING SCREW TO GET IMAGE IN PROPER HORIZONTAL POSITION - RETIGHTEN.

LOOSEN THIS CLAMPING SCREW TO RAISE AND LOWER IMAGE ON SCREEN - RETIGHTEN.

FIG. II

⑥ INSERT SLIDE CARRIER (FIG. III).
⑦ LIFT LAMP HOUSE COVER AND TIGHTEN SET SCREW (FIG III)
⑧ TURN PROJECTOR ON.
⑨ INSERT SLIDE.
⑩ SHOVE SLIDE HANDLE TO LEFT THUS PLACING SLIDE IN APERTURE.
⑪ REFINE FOCUS.
⑫ INSERT NEXT SLIDE IN OPPOSITE SIDE OF CARRIER - SHOVE TO RIGHT - REMOVE FIRST SLIDE. CONTINUE UNTIL SHOWING IS DONE. TURN PROJECTOR OFF.

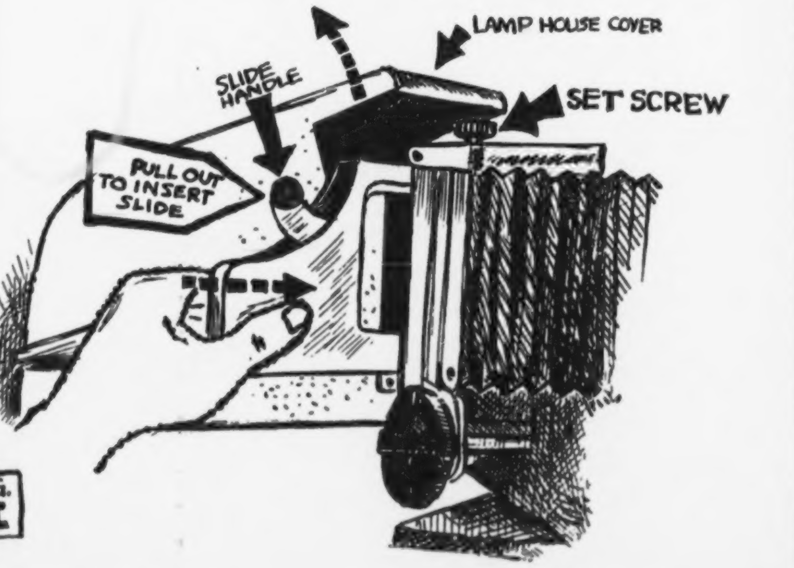
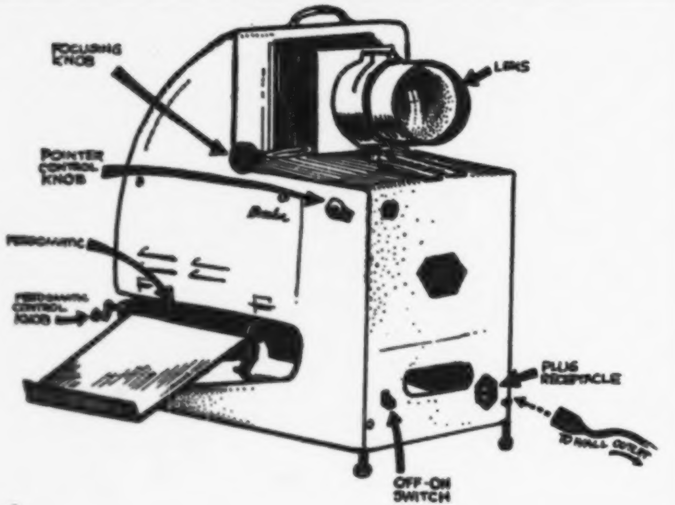

LAMP HOUSE COVER
SLIDE HANDLE
SET SCREW
PULL OUT TO INSERT SLIDE

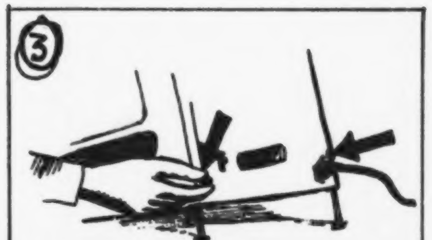
FIG. III

OPAQUE PROJECTOR VU-LYTE

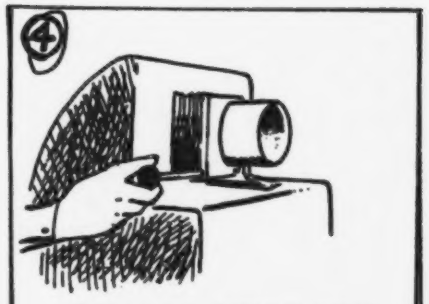


① CONNECT FEMALE END OF POWER CORD TO MALE RECEPTACLE. PLUG OTHER END OF POWER CORD TO WALL OUTLET (AC).

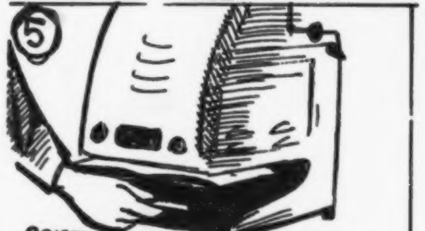
② TURN ON POWER SWITCH.



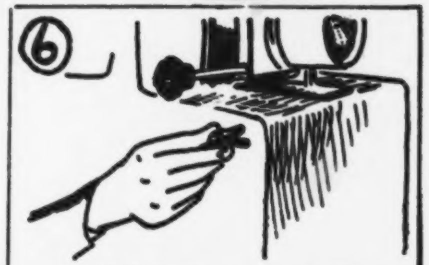
TO RAISE AND LOWER IMAGE ON SCREEN, LOOSEN ELEVATING LEG CLAMPING SCREWS (ARROWS), RAISE OR LOWER PROJECTOR, TIGHTEN SCREWS.



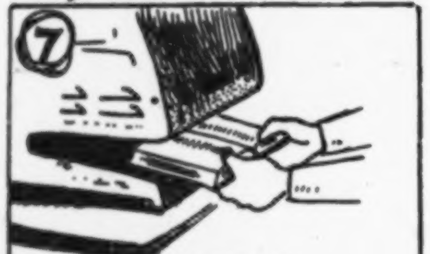
FOCUS UNTIL IMAGE IS SHARP



RAISE AND LOWER FEEDOMATIC OR PLATEN STAGE BY USE OF ROD TO REAR OF IT. LIFT AND LOWER GENTLY. IT IS SPRING OPERATED.

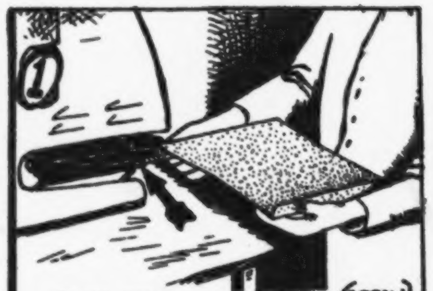


TO OPERATE POINTER - MOVING KNOB SIDEWAYS MOVES THE ARROW LEFT OR RIGHT. TWISTING KNOB UP OR DOWN MOVES ARROW VERTICALLY.

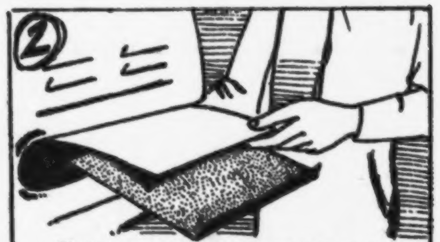


THICK OBJECTS SHOULD BE INSERTED FROM THE BACK AFTER FEEDOMATIC HAS BEEN LOWERED.

TO USE FEEDOMATIC

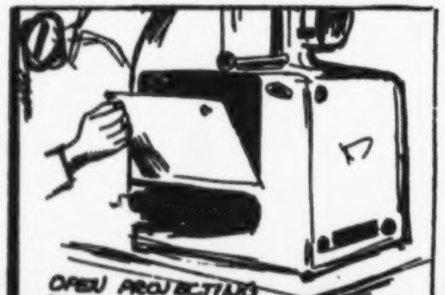


SLIDE TRAYS IN FLANGE (ARROW) AS SHOWN HERE.

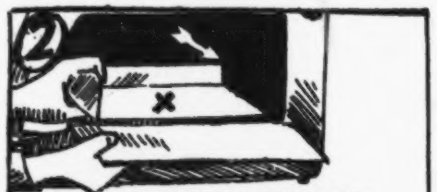


PLACE COPY TO BE PROJECTED IN THE FEEDING TRAY (OPPOSITE CRANK SIDE) INSERT ABOUT 1½". CRANK CLOCKWISE UNTIL COPY IS CENTERED.

TO GET TO LAMP AND OPTICAL SYSTEM FOR CLEANING AND/OR REPLACEMENTS



OPEN PROJECTING HOUSING DOOR BY LOOSENING TWO SCREWS HOLDING IT IN PLACE.



SWING SHIELD DOWN (X). THIS MAKES LAMP (ARROW) AVAILABLE AS WELL AS MOST OF THE OPTICAL SYSTEM. TO REMOVE LAMP, PRESS DOWN, TURN ONE QUARTER TURN COUNTER-CLOCKWISE AND LIFT OUT. TO INSERT NEW LAMP, MAKE SURE THAT FLANGES ON LAMP BASE MATCH SLOTS IN SOCKET. PRESS DOWN, TURN ONE-QUARTER TURN CLOCKWISE.

INSTRUCTIONAL MATERIALS

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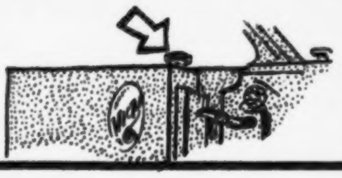
VICTOR Lamp Replacements

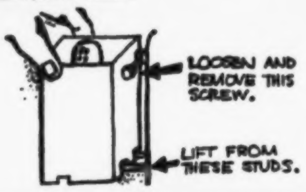
PROJECTOR LAMP

*REMOVING LAMP

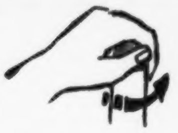
1 REMOVE PLUG. LOOSEN AND REMOVE KNOB (ARROW) AT TOP OF LAMP HOUSING. LIFT OFF HOUSING.



2 REMOVE LAMP BAFFLE ASSEMBLY.

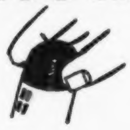

LOOSEN AND REMOVE THIS SCREW.
LIFT FROM THESE STUDS.

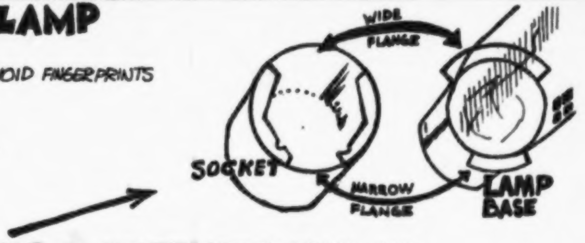
3 PRESS DOWN ON LAMP AND TURN IT ¼ TURN COUNTERCLOCKWISE, THEN LIFT OUT.



*INSTALLING LAMP

HOLD LAMP BY TOP TO AVOID FINGERPRINTS



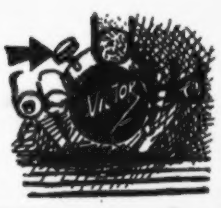

WIDE FLANGE
SOCKET
NARROW FLANGE
LAMP BASE

THEN - MATCH UP FLANGES IN SOCKET, PRESS DOWN AND TURN CLOCKWISE. WIPE LAMP FREE OF DIRT, REPLACE COVERS.

EXCITER LAMP

*REMOVING LAMP

1 TURN OFF EXCITER LAMP SWITCH. LOOSEN CHROME LOCKING SCREW (ARROW). GRASP BLACK PLASTIC COVER. PULL DRUM OUT EXPOSING LAMP.



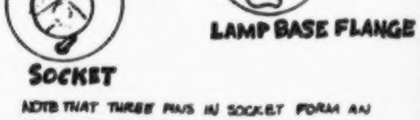
2 PRESS IN ON LAMP AND TURN IT COUNTERCLOCKWISE SLIGHTLY. YOU WILL FEEL IT "UNSEAT". REMOVE.

*INSTALLING LAMP

1 INSERT LAMP SO THAT HOLES IN BASE COLLAR COINCIDE WITH PINS IN SOCKET.

2 PRESS IN AND TURN CLOCKWISE SLIGHTLY.

3 REPLACE SOUND DRUM WITH BOTTOM LUG IN PROPER SLOT AND TIGHTEN LOCK SCREW.


LAMP BASE FLANGE
SOCKET

NOTE THAT THREE PINS IN SOCKET FORM AN ISOSCELES TRIANGLE WITH SHORTEST DISTANCE BETWEEN TOP TWO PINS.

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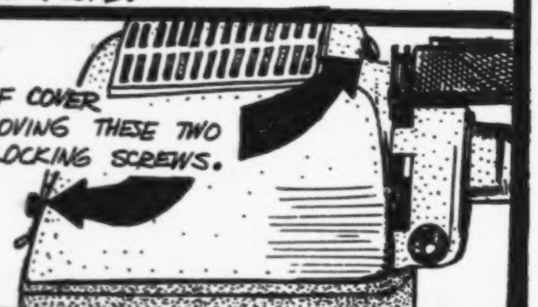
INSTRUCTIONAL MATERIALS DIV.

PENN STATE U.
DEPT OF ED SERV. '67 [illegible]

REPLACING THE [redacted] [redacted] Victor Soundview LAMP.

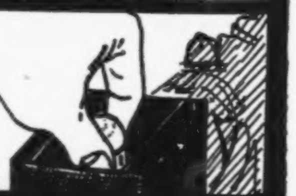
① REMOVE POWER CORD.

② TAKE OFF COVER BY REMOVING THESE TWO COVER LOCKING SCREWS.



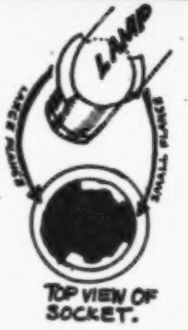
③ TO REMOVE:

- PRESS DOWN ON LAMP, TURN ¼ TURN COUNTER-CLOCKWISE, LIFT OUT.



④ TO REPLACE:

NOTE LARGER AND SMALLER FLANGES ON LAMP BASE. LINE THESE UP WITH CORRESPONDING SIZES IN SOCKET – PLACE IN SOCKET PRESS DOWN AND TURN ¼ TURN CLOCKWISE UNTIL LAMP SEATS WITH A CLICK.

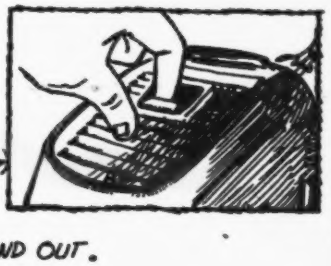


TOP VIEW OF SOCKET.

⑤ WIPE LAMP FREE OF DUST AND FINGERPRINTS.

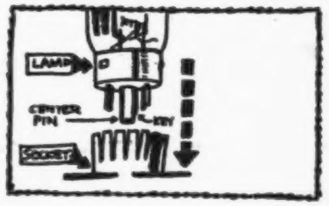
[redacted] SVE GRAFLEX LAMP REPLACEMENT

1 REMOVE POWER CORD FROM WALL OUTLET. AFTER UNIT HAS COOLED DOWN, GRASP COVER AND LEVER (ILLUSTRATION→) AND LIFT STRAIGHT OUT.



2 PULL LAMP DIRECTLY UP AND OUT.

3 TO REPLACE, REST CENTER PIN OF LAMP IN CENTER HOLE OF SOCKET AND ROTATE LAMP UNTIL PRONGS AND KEY ARE "KEYED" IN THEN PUSH DOWN FIRMLY UNTIL LAMP SEATS WITH A CLICK.



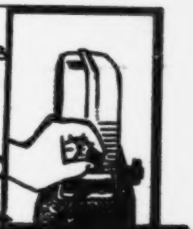
4 WIPE LAMP FREE OF FINGER PRINTS AND DUST.

FILMSTRIP PROJECTOR LAMP REPLACEMENT

TO REPLACE Viewlex LAMP

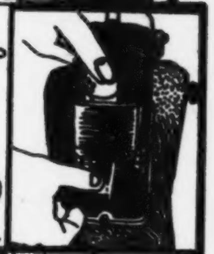
1ST REMOVE POWER CORD FROM WALL OUTLET.

2ND REMOVE COVER BY TURNING KNOB COUNTER CLOCKWISE AND LIFTING COVER OFF.



BACK VIEW

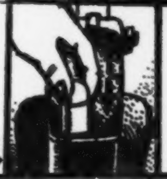
3RD WHEN COVER IS OFF, HOLD LAMP TOP LIGHTLY WITH ONE HAND AND PRESS LEVER WITH OTHER (THUMB IN ILLUSTRATION). LAMP WILL POP UP.



②

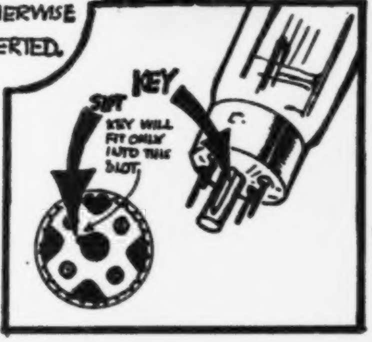
3/4 TOP VIEW

4TH TO INSTALL NEW LAMP, PLACE STRAIGHT DOWN INTO SOCKET. THE PRONGS WILL FIT INTO SOCKET HOLES. MAKE CERTAIN YOU "KEY" IN (FIG 4), OTHERWISE LAMP CANNOT BE INSERTED.



③

CAUTION: NEVER TWIST LAMP WHEN INSERTING.



④

5TH WIPE OFF FINGERPRINTS AND DUST.

RCA LAMP REPLACEMENTS ✳

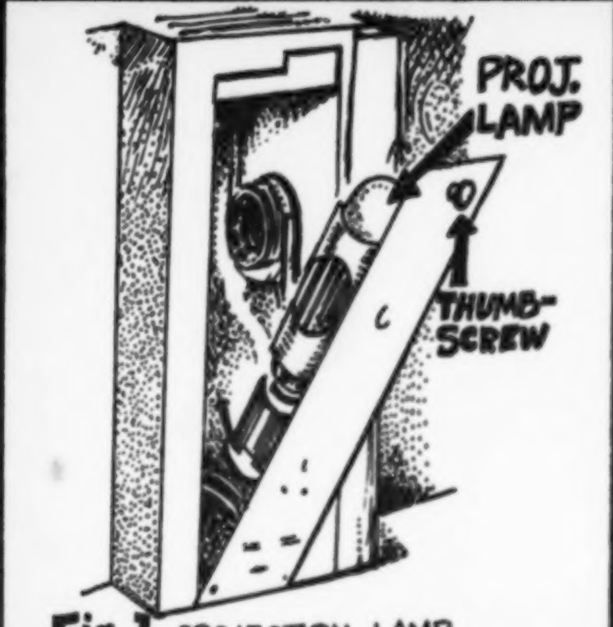


Fig.1 PROJECTION LAMP

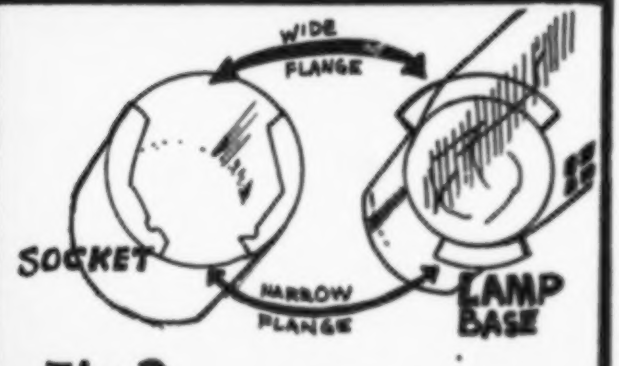


Fig.2

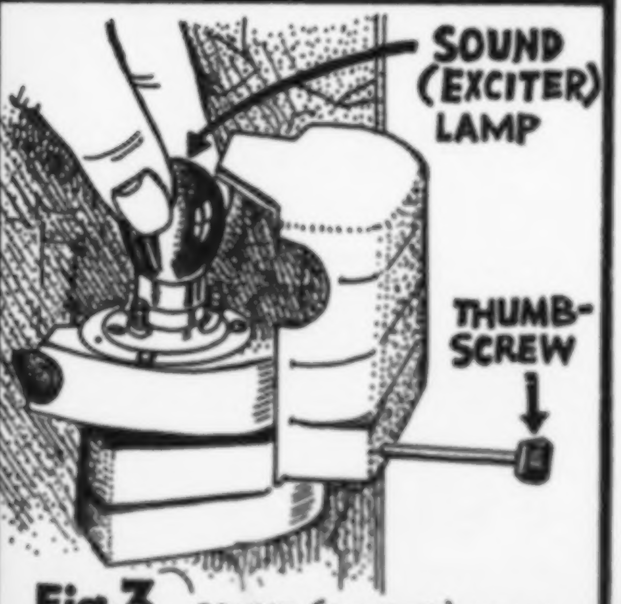


Fig.3 SOUND (EXCITER) LAMP

✳

REMOVAL OF PROJECTION LAMP (FIG. 1)

If the lamp burns out during a showing, turn OFF the projector and lamp switches. To remove this lamp, press down on it firmly and turn it counterclockwise about 90 degrees until it releases from its socket. Use a heavy cloth to protect the fingers.

✳

INSTALLATION OF PROJECTION LAMP (FIG. 2)

To install the new lamp, line up the wide and narrow flanges on base with the mating socket slots (see fig 2). Press lamp in and turn about 90 degrees until it "clicks" into place. Be very careful not to leave any fingerprints on the clear portion of lamp; such prints will burn into the glass and impair efficiency. Turn the projector switch to PROJ., the lamp switch to LAMP and resume the show.

CAUTION: DO NOT OPEN THE PROJECTION LAMP DOOR WHILE LAMP IS BURNING; THE GLASS SIDES OF THE LAMP WILL SOFTEN AND BULGE IF IT IS REMOVED FROM THE BLOWER AIR STREAM.

✳

SOUND (EXCITER) LAMP REPLACEMENT (FIG. 3)

Open the sound optical bracket. grasp the sound lamp as shown, lift it slightly and turn it counterclockwise to disengage the socket pins.

To install new lamp, line up the notch in its flange with the small hole in the socket plate, and drop the flange over the socket pins. Push it down against the socket base and turn the lamp clockwise until it snaps into place.

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